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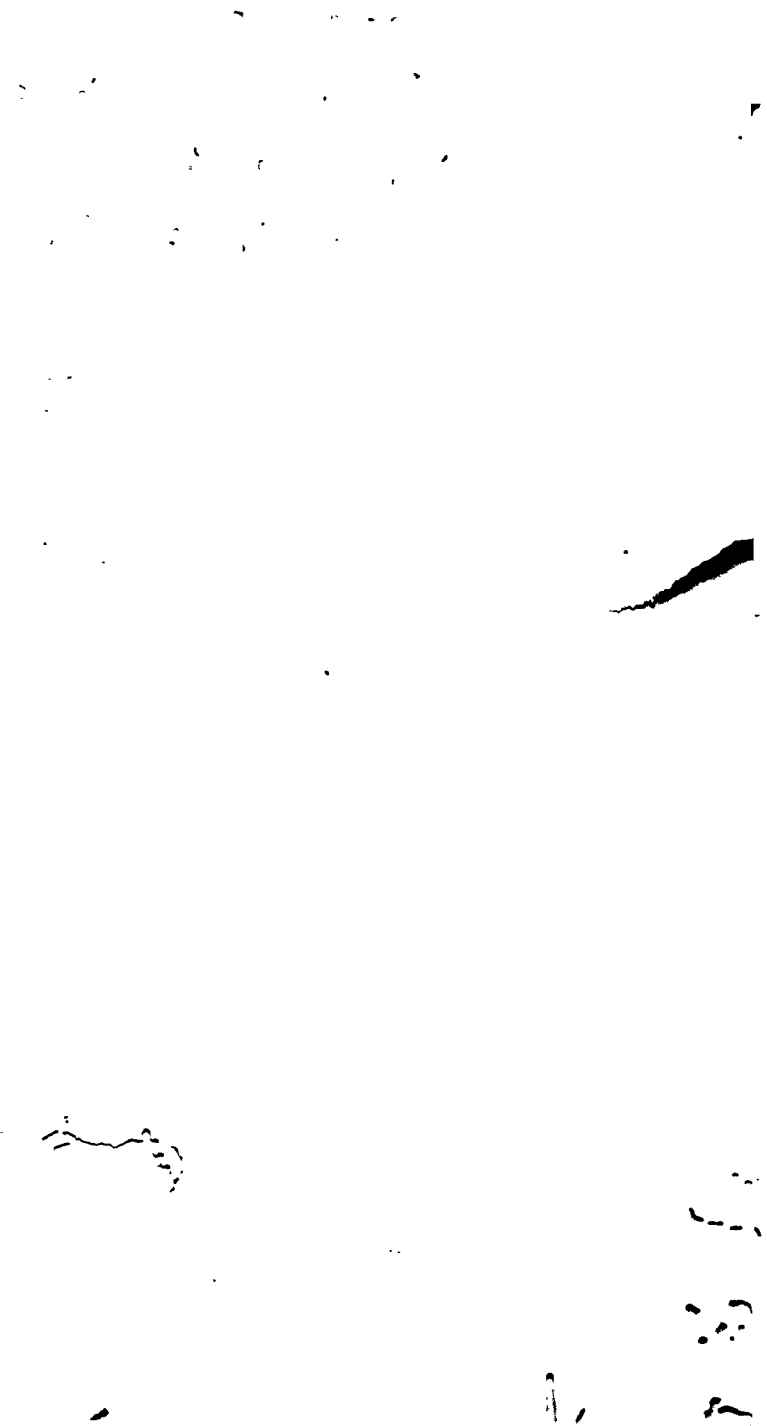
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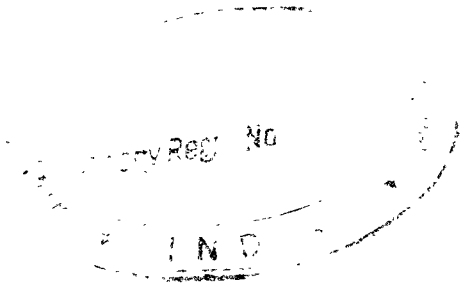
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THE

JOURNAL

OF THE

ROYAL GEOGRAPHICAL SOCIETY.

VOLUME THE THIRTY-THIRD.

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1863.

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Map-Rooms.—The accessions to this department since the last Anniversary consist of 830 Maps and Charts, and two Atlases, all of which have been mounted on the establishment, and arranged in geographical order.

The facility of access to these important documents has been largely tested during the past year by Statesmen and Travellers; also for general purposes of scientific research, and the collection of data for geographical works in course of publication. The following may be specially noticed :—Ordnance Maps of England, Wales, Scotland, and Ireland, on various scales; Charts of the Hydrographic Department of the Admiralty, and by the Dépôt de la Marine of France; the Government Maps of Bavaria, Denmark, Holland, Sweden, and Switzerland; Maps of Italy and the Austrian Empire, presented by the Austrian Government through the Commissioners of the International Exhibition, viz. :— Grand Duchy of Tuscany, on 52 sheets; Map of Hungary, on 17 sheets; General Map of the Austrian Empire, 10 sheets; Dalmatia, on 16 sheets; Vienna and environs, on 52 sheets, mounted and varnished; 15 sheets of the Grand Duchy of Tuscany, mounted and varnished, in gilt frame; Reymann's large Map of Central Europe, on 405 sheets, presented by M. Carl Flemming, of Glogau; Carnbée's Atlas, 9 sheets; Magnetic Chart, by M. Jules A. Lelaisant, of Paris; Maps of Portugal, through Count Lavradio; Topographical Survey of part of the Himalaya Mountains, under the superintendence of General Sir A. S. Waugh; various Maps of Denmark, by the Society of Northern Antiquaries, through the Secretary, Professor C. C. Rafn; Carte du Luban, by the Dépôt de la Guerre of France; Russia in Europe, on 12 sheets, by the Geographical Society of St. Petersburg; the River Yang-tsze-Kiang, by Captain T. Blakiston, R.A., F.R.G.S.; Russian Map of a Route from Pekin to Kiakta, presented by C. M. Grant, Esq.; Black's new Atlas of the World and Map of Scotland; Statistical Maps of Sweden, by Major August Hahr; Ethnological Map of Finland, sheets 4 and 5, by J. A. Fries; Japanese Atlas, 12 sheets, by Siebold, presented by Major E. D. Malcolm, R.E.; Clark's Map of the Holy Land, by E. Stanford; Fullarton's Atlas; continuation of Philip's Imperial Library Atlas; Stanford's Library Map of Asia, constructed by A. K. Johnston; and various MS. maps from the Expeditions under Livingstone, Speke, and Grant, M'Douall Stuart, Landsborough, Walker, and M'Kinlay, &c.

Library.—The additions to this department since the last Anniversary comprise 735 books and pamphlets, including 27 volumes by purchase. Among these may be noticed Barrett-Lennard's 'Travels in British Columbia;' Underhill's 'West Indies;' Worms 'On the Earth and its Mechanism;' Pim's 'Gate of the Pacific;' Arbuthnot's 'Herzegovina;' 'Bombay Magnetical and Meteorological Observations for 1860;' 'Report upon the Physics and Hydraulics of the Mississippi River;' Gether's 'Gedanken über die Naturkraft;' Trap's 'Statistical and Topographical Work on the Kingdom of Denmark,' 5 vols. 8vo., presented by Captain Irminger of the Royal Danish Navy; 'Report upon the Colorado River of the West, explored in 1857-58, by Lieut. J. C. Ives;' 'Almanaque Nautico para 1864;' and Wills' 'Expedition into Australia;' also the Transactions of the principal Literary and Scientific Institutions.

Instruments.—The prize of 50*l.* or a Gold Medal to the designer or maker of the most serviceable reflecting instrument for the measurement of angles is still open for competition; specifications may be obtained at the office of the Society. Instruments have been lent to Dr. D. Walker, R.N., F.R.G.S., who left England in December, 1862, to explore the North-West Coast of America; to M. Jules Gérard, who left England last February for Western Africa; to Captain B. C. Pim, R.N., F.R.G.S., to determine a line of railway across Central America from Gorgon Bay to the Lake of Nicaragua; and to other travellers.

Expeditions.—Telegraphic messages have been received from Alexandria, announcing the arrival of Captains Speke and Grant at Khartúm, and the settlement of the great question—the sources of the Nile.

Royal Premium.—The Founder's Gold Medal for the encouragement of geographical science and discovery has been awarded to Mr. Frank T. Gregory for his successful explorations in Western Australia, during which he fixed astronomically 58 positions for latitude and 19 for longitude; and the Patron's or "Victoria Gold Medal" has been awarded to Mr. John Arrowsmith for the very important services he has rendered to geographical science in general, and especially to the Royal Geographical Society from its foundation to the present time.

Gold Watches, bearing honorary inscriptions, have also been awarded to Mr. William Landsborough, to Mr. John M'Kinlay, and to Mr. Frederick Walker, for their successful explorations in Australia.

Secretaries.—The retirement of Dr. Norton Shaw, who has for many years filled the onerous offices of Acting Secretary and Editor of the Journals, during which period the Society has so largely increased in numbers and in financial prosperity, calls for the best wishes of all its members for the improvement of his health and likewise for a substantial acknowledgment of his valuable services. In recognition of these services, extending over more than fourteen years, it has been unanimously agreed by the Council to recommend that a sum of 500*l.* be presented to him by the Society.

The Honorary Secretaries have also resigned their offices, and are entitled to the thanks of the Meeting for their valuable and gratuitous labours.

Regulations.—The Council, in reconstructing the administrative arrangements of the Society, have, after mature deliberation, decided to recommend the following changes, viz. :—

That in place of three *Honorary* Secretaries there shall be, besides the Foreign Secretary, two Secretaries, who, by virtue of their office, shall be members of the Council and of all Committees appointed by the Council, and who shall have authority over all the salaried officers of the Society.

That a Foreign Secretary be appointed, who shall also be an *ex officio* member of the Council, and whose duties shall be similar to those of the *Honorary* Foreign Secretary under existing regulations.

That an Assistant-Secretary, a salaried officer, resident at the Society's apartments, be appointed, who shall be Editor of the Society's publications; have charge, under the Secretaries, of the property of the Society on the premises; and exercise a general supervision over the subordinate officers and servants of the Society.

Upon adoption of the Report, resolutions authorizing the requisite changes in the existing regulations of the Society will be submitted.

House.—By the kind permission of the Senate of the London University and the Council of the Royal Society, the Evening Meetings continue to be held at Burlington House.

BALANCE-SHEET FOR THE YEAR 1862.

Receipts.

	£.	s.	d.
Cash Balances in hand	1070	14	3
Subscriptions of 1100 Fellows	2195	0	0
Compositions of 34 Fellows	846	0	0
Entrance Fees of 181 Fellows	543	0	0
Parliamentary Grant	500	0	0
Sale of Publications, and Advertisements	110	17	7
Dividends on Stock	209	6	11
Subscriptions in Arrear	160	0	0
Royal Premium Grant	52	10	0
Subscriptions overpaid	13	2	0
Rent of Stables, less Taxes	29	11	3
	£5730	2	0

Expenditure.

	£.	s.	d.
Publications—Journal and Proceedings	948	11	3
Salaries—Secretary, Curator, and Clerks	822	10	0
Rent, Taxes, and Wages, &c.	721	2	10
Library and Map-Rooms	138	12	3
Office Expenses	380	18	0
Gold Medals and other Awards	72	5	0
Overpaid Subscriptions returned	12	0	0
Investments, 1500*l.* New 3 per Cents.	1389	7	6
Cash Balance—Bankers £1211 6 8			
Petty Cash 33 8 6			
	1244	15	2
	£5730	2	0

ROBERT BIDDULPH, *Treasurer.*

Audited 19th March, 1863.

E. OSBORNE SMITH,
CHARLES WHITE,
JOHN C. MARSHMAN, } *Auditors.*

ESTIMATE FOR THE YEAR 1863.

Receipts.

	£.	s.	d.
Cash Balance, 1st Jan., 1863	1244	15	2
Annual Subscriptions	2300	0	0
Life Compositions	700	0	0
Entrance Fees	450	0	0
Arrears of Subscriptions	100	0	0
Royal Premium Grant	52	10	0
Parliamentary Grant	500	0	0
Sale of Publications	100	0	0
Dividends and Small Receipts	300	0	0
	£5747	5	2

Expenditure.

	£.	s.	d.
Journal and Proceedings	1000	0	0
Rent, Taxes, and House Expenses	700	0	0
Salaries—Assistant-Secretary, Curator, and Clerks	900	0	0
Gratuity to a Secretary	500	0	0
Library and Map-Rooms	250	0	0
Office Expenses, Postage, Stamps, &c.	350	0	0
Investment for Permanent Fund	1850	0	0
Gold Medals and other Awards	120	0	0
Sundries for Balance	77	5	2
	£5747	5	2

SUMMARY OF AUDITED ACCOUNTS

FROM 14TH JULY, 1830, TO THE 31ST DECEMBER, 1862.

Receipts.

	£.	s.	d.
Entrance Fees	7,863	0	0
Life Compositions	13,490	0	0
Annual Subscriptions	25,043	3	0
Grants in Aid	10,943	5	0
Royal Premiums	1,680	0	0
Sales of Geographical Publications	3,518	6	9
Dividends and other Receipts	5,315	4	0
Sales of Stock invested	2,963	5	2
	£70,816	3	11

Payments.

	£.	s.	d.
Rent, Fixtures, and Fittings	12,755	19	9
Office Expenses	6,027	6	5
Salaries—Secretary, Curator, Librarian, and Clerks	13,094	5	0
Cost of Geographical Publications	15,012	9	9
Purchase of Books, Maps, and Instruments	3,102	1	4
Grants in Aid of Expeditions	7,786	8	0
Medals and other Premiums	1,834	7	0
Life Compositions invested	9,721	17	6
Subscriptions returned	236	14	0
	£69,571	8	9
Bankers' Balance and Petty Cash	1,244	15	2
	£70,816	3	11

E. OSBORNE SMITH, F.R.G.S.

Library Regulations.

I. The Library will be open every day in the week (Sundays excepted) from 10·30 in the morning to 4·30 in the afternoon,* except on New-Year's Day, Good Friday to Easter Monday inclusive, and Christmas week; and it will be closed one month in the year, in order to be thoroughly cleaned, viz. from the first to the last day of September.

II. Every Fellow of the Society is entitled (*subject to the Rules*) to borrow as many as four volumes at one time.

Exceptions :—

1. Dictionaries, Encyclopædias, and other works of reference and cost, Minute Books, Manuscripts, Atlases, Books and Illustrations in loose sheets, Drawings, Prints, and unbound Numbers of Periodical Works, *unless with the special written order of the President.*
2. Maps or Charts, *unless by special sanction of the President and Council.*
3. New Works before the expiration of a month after reception.

III. The title of every Book, Pamphlet, Map, or Work of any kind lent, shall first be entered in the Library-register, with the borrower's signature, or accompanied by a separate note in his hand.

IV. No work of any kind can be retained longer than one month; but at the expiration of that period, or sooner, the same must be returned free of expense, and may then, upon *re-entry*, be again borrowed, provided that no application shall have been made in the mean time by any other Fellow.

V. In all cases a list of the Books, &c., or other property of the Society, in the possession of any Fellow, shall be sent in to the Secretary *on or before the 1st of July in each year.*

VI. In every case of loss or damage to any volume, or other property of the Society, the borrower shall make good the same.

VII. No stranger can be admitted to the Library except by the introduction of a Fellow, whose name, together with that of the Visitor, shall be inserted in a book kept for that purpose.

VIII. Fellows transgressing any of the above Regulations will be reported by the Secretary to the Council, who will take such steps as the case may require.

By Order of the Council.

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* On Saturday the Library is closed at 2·30 P.M.

LIST

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OF THE

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ROYAL GEOGRAPHICAL SOCIETY.

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Vice-Patron.

H.R.H. THE PRINCE OF WALES.

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(ELECTED 25TH MAY, 1863.)

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HUME GREENFIELD.

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WRANGELL, Admiral Baron, St. Petersburg
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FELLOWS.

(To April, 1864.)

N.B.—*Those having * preceding their names have compounded for life.*

Year of Election.	
1863	Abdy, Rev. Albert, M.A. 4, *Grove-place, Highlows, Tottenham.*
1860	Á Beckett, Arthur M., Esq., F.R.C.S.E., 15, *Uxbridge-road, Surbiton, S.W.*
1851	Abinger, W. F. Scarlett, Lord. 70, *Jermyn-street, S.W.*
1855	Acland, Prof. Henry Wentworth, M.D. *Oxford.*
1861	Acland, J. Barton Arundel, Esq. *Mount Peel, Canterbury, New Zealand.*
1853	Acland, Sir Peregrine Palmer F. P., Bart. *Fairfield, Somerset.*
1830	*Acland, Sir Thomas Dyke, Bart., F.R.S. *Waterloo-hotel, Jermyn-street, S.W.; and Killerton, Exeter, Devon.*
1862	Adams, Edwin, Esq. *Lower School, Dulwich College, S.*
1861	Addington, Right Hon. H. U. 78, *Eaton-place, S.W.*
1862	10 Addison, Col. Thomas, C.B. *Aldershot.*
1860	Agnew, Sir Andrew, Bart., M.P. *Lochnaw-castle, Wigtownshire.*
1859	Ainslie, Col. H. Francis. *Junior United Service Club, S.W.; and Burlington-chambers, 180, Piccadilly, W.*
1830	*Ainsworth, W. Francis, Esq., F.S.A. *Ravenscourt-villa, New-road, Hammersmith, W.*
1857	Airey, John Moore, Esq. *Conservative Club, S.W.*
1859	Airlie, David Graham, Earl of. *Holly-lodge, Kensington, W.*
1860	Aitchison, David, Esq. 180, *Piccadilly, W.*
1830	*Albemarle, George Thomas, Earl of. 11, *Grosvenor-square, W.; Quiddenham-hall, Larlingford, Norfolk; and Elvedon-hall, Suffolk.*
1862	Alcock, Sir Rutherford, K.C.B. 10, *Halfmoon-street, Piccadilly, W.*
1834	*Alcock, Thomas, Esq., M.P. *Kingswood-warren, near Epsom, Surrey.*
1838	20*Aldam, William, Esq. *Frickley-hall, near Doncaster.*
1857	Aldrich, Captain Robert D., R.N. *Windmill-road, Croydon, Surrey, S.*
1830	Alexander, Colonel Sir Jas. Ed., K.L.S., F.R.A.S., etc., 14th Regt: *United Service Club, S.W.; and Westerton-house, Bridge of Allan, N.B.*
1855	Alger, John, Esq. 16, *Oakley-square, N.W.*
1857	Allan, George W., Esq. *Toronto, Canada.*
1858	Allan, Jas., Esq. 122, *Leadenhall-street, E.C.*
1859	Alsager, Thos. H., Esq. *Reform Club, S.W.; and Chislehurst, Kent.*
1854	Ancona, J. S., Esq. 8, *John-street, Adelphi, W.C.*

Year of Election.	
1860	Anderdon, John Edmund, Esq. 4, *Stanhope-street, Hyde-park-gardens, W.*
1863	Anderson, Arthur, Esq. *Norwood-grove, Norwood, S.*
1862	30 Anderson, James, Esq. 1, *Billiter-court, City, E.C.*
1861	Anderson, John, Esq. *Shanghai.*
1861	*Anderson, Col. W., C.B. 19, *Gloucester-square, Hyde-park, W.*
1856	*Andrew, William P., Esq.
1861	Annesley, Col. the Hon. Hugh, M.P. 25, *Norfolk-street, Park-lane, W.*
1860	*Anson, Sir John William Hamilton, Bart. 55, *Rutland-place, S.W.*
1853	Ansted, Prof. D. T., M.A., F.R.S., etc. *Athenæum Club, S.W.; and Bonair St. Martin, Guernsey.*
1864	Anstey, G. A., Esq. 14, *Sussex-gardens, Hyde-park, W.*
1857	Anstruther, M.-Gen. Philip, C.B., Madras Artil. 1, *Chapel-st., Grosvenor-pl. S.W.*
1863	Anstruther, Philip, Esq. 17, *Norfolk-street, Park-lane, W.*
1830	40 *Antrobus, Sir Edmund, Bart. 146, *Piccadilly, W.; Lower Cheam, Epsom, Surrey; and Amesbury, Wilts.*
1863	Arber, Edward, Esq., A.K.C., F.S.A. *Admiralty, W.C.; and* 13, *Little Stanhope-street, Mayfair, W.*
1858	Arbuthnot, George, Esq. 23, *Hyde-park-gardens, W.*
1862	Arbuthnot, Lieut. George, R.H.A. *Cowarth, Sunningdale.*
1860	Arcedeckne, Andrew, Esq. 35, *Albemarle-street, W.*
1861	Archer, Graves Thos., Esq. 1, *Ennismore-place, Prince's-gate, S.W.*
1860	Archer, W. H. D., Esq., of Tasmania. *Brickendon, Longford, near Launceston, Tasmania.*
1855	*Arden, Richard Edward, Esq. *Sunbury-park, Middlesex, S.W.*
1858	*Armistead, Rev. Charles John, M.A., F.S.A. *Long's-hotel, New Bond-street, W.; National Club, S.W.; and Roundhay, nr. Leeds; H.M.S. 'Pembroke,' Harwich.*
1863	Armitage, Edward, Esq. 3, *Hall-road, St. John's-wood, N.W.*
1857	50 Armstrong, Alexander, Esq., M.D., R.N., F.R.C.P., Deputy Inspector-General Royal Naval Hospital, Malta. *H.M.S. 'Pembroke,' Harwich; and Junior United Service Club, S.W.*
1830	*Arrowsmith, John, Esq., F.R.A.S. 35, *Hereford-square, Old Brompton, S.W.*
1863	Arthur, Commander William, R.N. *Priory, Leatherhead; and H.M.S. 'Lang-rail,' W. Indies.*
1864	*Ashton, R. J. Esq. 39, *Lombard-street, E.C.*
1853	*Ashwell, James, Esq., M.A., F.G.S.
1851	Astley, Francis D. P., Esq., M.R.I. 67, *Eaton-square, S.W.*
1830	*Atkins, John Pelly, Esq., F.S.A. *Halsted-house, near Sevenoaks.*
1860	Attwell, Professor Henry. *Barnes, S.W.*
1839	Attwood, Matthias Wolverley, Esq. 27, *Gracechurch-street, E.C.*
1861	Aubin, William, Esq. 3, *Furnival's-inn, Holborn, E.C.*
1859	60 Austen, Capt. Henry H. Godwin, 24th Foot, Trig. Survey, Panjab. *Junior United Service Club, S.W.; and Chilworth-manor, Guildford, Surrey.*
1863	Austin, John G., Esq. 45, *Porchester-terrace, W.*
1863	Austin, Rear-Admiral Horatio T. *Malta.*

Year of Election.	
1854	Ayrton, Acton S., Esq., M.P.
1845	*Ayrton, Frederick, Esq. *Egypt.*
1836	*Back, Vice-Adm. Sir Geo., D.C.L., F.R.S. 109, *Gloucester-place, Portman-sq., W.*
1863	*Backhouse, John Henry, Esq. *Darlington.*
1864	Badger, Rev. Geo. P. 17, *Dawson-place, Bayswater, W.*
1862	Bagot, Capt. L. H. 55, *Inverness-terrace, W.*
1863	Bagot, Christopher N., Esq. *Oriental Club, W.*
1855	Baikie, Wm. Balfour, Esq., M.D., R.N. *Niger Expedition. Brunswick-cottage, Forton-road, Gosport.*
1859	Bailey, L. C., Esq., Staff Commander, R.N. *Topographical Department, New-street, Spring-gardens, S.W.*
1857	Baillie, Capt. John, 26th Bengal Native Infantry. *India.*
1862	Baillie, John B., Esq. *Leys-castle, Inverness.*
1861	Baillie, William Henry, Esq. 67, *Belgrave-square, S.W.*
1861	*Baker, John, Esq.
1862	Baker, Capt. Robert B. 23, *Clifton-villas, Maida-hill, W.*
1855	Baker, Capt. Wm. T., 85th Regt. *Junior United Service Club, S.W.; and* 31, *Grosvenor-place, Bath.*
1861	Baldwin, William Charles, Esq. *Leyland-vicarage, Preston.*
1861	Balfour, David, Esq. *Balfour-castle, Kirkwall, N.B.*
1847	Balfour, Colonel George, R.A., C.B. *Oriental Club, Hanover-square, W.*
1853	Balfour, John C. B., Esq. *New South Wales; and Colinton, Queensland.*
1863	Balfour, John Osborn, Esq. 26, *Inverness-terrace, W.*
1863	Balfour, William, Esq. *Birston, Orkney Isles.*
1860	Ball, John, Esq. *Oxford and Cambridge Club, S.W.*
1863	Bamforth, Rev. J., Principal of Doveton College. *Madras.*
1852	Bancroft, Capt. W. C., 16th Regt. *Aide de Camp and Military Sec., King's House, Jamaica; M'Gregor and Co., Charles-street, S.W.*
1862	Banks, George F., Esq., Surgeon, R.N. *Llandudno, North Wales.*
1858	Bannerman, Sir Alexander, Bart. *Crimonmogote, Aberdeenshire.*
1840	*Barclay, Arthur Kett, Esq., F.R.S. *Park-street, Southwark, S.E.; and Bury-hill, Dorking, Surrey.*
1863	Barford, A. H., Esq., M.A. 1, *Cornwall-terrace, Regent's-park, N.W.*
1858	Baring, The Hon. Francis. 16, *St. James's-square, S.W.*
1838	Baring, Rt. Hon. Sir Francis T., Bart., M.P., F.R.S. *Stratton-park, Andover, Hants.*
1835	*Baring, John, Esq. *Oakwood, Chichester.*
1844	*Baring, Thomas, Esq., M.P. 41, *Upper Grosvenor-street, W.*
1862	Barlee, Frederick Palgrave, Esq. *Perth, Western Australia.*
1853	Barnett, Capt. Edward, R.N. 14, *Woburn-square, W.C.*
1858	Barratt, James, Esq. *Lymne-hall, near Harrington, Cheshire.*
1862	Barrett-Lennard, Capt. C. E. 7, *Albemarle-street, W.*

Year of Election	
1859	Barrington, the Hon. George.
1833	Barrow, John, Esq., F.R.S., F.S.A. 17, *Hanover-terrace, Regent's-park, N.W.*
1863	Barry, Alfred, Esq. *Beckenham, Kent, S.W.*
1856	Barth, Heinrich, Esq., PHIL. DR. *Berlin.*
1857	Bartholomew, John, Junr., Esq. 4, *North-bridge, Edinburgh.*
1861	Bartlett, Herbert Lewis, Esq. *Union Club, S.W.*
1862	Barton, Dr. Alfred. 1, *South-bank-terrace, Surbiton-hill, S.W.*
1864	Basevi, Capt. J. P., R.E. 100, *Belgrave-road, S.W.*
1837	*Bateman, James, Esq., F.R.S., L.S. *Knypersley-hall, Staffordshire.*
1859	Bateman, John F., Esq., C.E. 16, *Great George-street, Westminster, S.W.*
1852	*Bates, Josh., Esq. 21, *Arlington-st., Piccadilly, S.W.; and East Sheen, Surrey, S.W.*
1843	Bathoe, Charles, Esq. 28, *York-place, Portman-square, W.*
1858	Baxendale, Joseph H., Esq. 14, *Chester-terrace, Regent's-park, N.W.; and Scott's-bridge, near Rickmansworth, Herts.*
1863	Bayley, H. Esq. *Blackheath-park, Kent.*
1862	Bayly, Lieut.-Col. John. *Ordnance Survey Office, Glasgow.*
1862	Baynes, Lieut.-Col. R. Stuart. *Army and Navy Club, S.W.; and* 38, *Jermyn-street, S.W.*
1852	Beardmore, Nathaniel, Esq., C.E. 30, *Great George-street, Westminster, S.W.*
1858	Beauclerk, Aubrey de Vere, Esq. *Ardglass, Co. Belfast.*
1854	Beaufort, William Morris, Esq., Bengal Civil Service. *Bengal.*
1856	Beaumont, John Aug., Esq. *Wimbledon-park-house, Wimbledon, S.W.; and* 50, *Regent-street, W.*
1851	*Beaumont, Wentworth B., Esq., M.P. 144, *Piccadilly, W.; Bywell-hall, Newcastle-upon-Tyne; and Bretton-park, Wakefield.*
1863	Beavan, Hugh J. C., Esq., F.A.S.L. *Grafton Club, W.; and* 13, *Blandford-square, Regent's-park, N.W.*
1830	Becher, Capt. Alex. B., R.N. *Admiralty, S.W.; and* 13, *Dorset-place, Dorset-sq., N.W.*
1861	Beckett, James F., Esq., Staff Commander, R.N., F.R.S.A. 15, *Buckland-crescent, Belsize-park, N.W.; and Seacliffe-cottage, Burchill, Sussex.*
1838	*Beckford, Francis L., Esq. *Travellers' Club, S.W.*
1859	Bedford, Capt. G. Augustus, R.N. 5, *Ormond-terrace, Regent's-park, N.W.*
1860	Beeton, Samuel Orchart, Esq. 248, *Strand, W.C.; and Pinner, Middlesex, W.*
1861	*Begbie, James, Esq. 27, *Mark-lane, E.C.*
1860	Begbie, Thomas Stirling, Esq. 4, *Mansion-house-place, E.C.*
1846	Beke, Charles Tilstone, Esq., PH. DR., F.S.A., &c. *Bekesbourne-house, near Canterbury; and Cambridge-heath, Hackney, N.E.*
1853	Belcher, Rev. Brymer. *St. Gabriel's, Pimlico, S.W.*
1830	*Belcher, Rear-Adm. Sir Edward, C.B., F.R.A.S. 7, *Norland-square, W.*
1858	Beldam, Edw., Esq. 1, *Stone-buildings, Lincoln's-inn, W.C.; and Royston, Herts.*
1848	Beldam, Joseph, Esq. *Royston, Herts.*
1863	Belmore, The Earl of. *Dover-street, Piccadilly, W.*

Year of Election.	
1863	*Bell, Charles, Esq. *Richmond.*
1858	Bell, C. Davidson, Esq., Surveyor-General, Cape of Good Hope. *Cape Town.*
1850	*Bell, James, Esq. 1, *Devonshire-place, Portland-place, W.*
1830	*Bell, James Christian C., Esq. 42, *Westbourne-terrace, W.; and* 15, *Angel-court, Throgmorton-street, E.C.*
1830	*Bennett, John Joseph, Esq., F.R.S. *British Museum, W.C.*
1857	Bennett, J. Risdon, Esq., M.D. 15, *Finsbury-square, E.C.*
1856	140*Benson, Robert, Esq. 16, *Craven-hill-gardens, Bayswater, W.*
1856	*Benson, William, Esq., Barrister-at-Law. *Oxford and Cambridge Club, Pall Mall, S.W.*
1830	Bentham, George, Esq., Pres. L.S. 25, *Wilton-place, S.W.*
1833	Bentley, Richard, Esq. *New Burlington-street, W.*
1859	Berens, H. Hulse, Esq. *Hudson-bay-house, Fenchurch-street, E.C.*
1861	Berkley, George, C.E. 24, *Great George-street, S.W.*
1856	Berry, Josiah, Esq. 16, *Regent-square, W.C.*
1863	Best, William, Esq. 85, *Oxford-terrace, Hyde-park, W.*
1842	*Bethune, R.-Admiral C. R. Drinkwater, C.B. 56, *Westbourne-ter., Hyde-park, W.*
1836	Betts, John, Esq. 115, *Strand, W.C.*
1862	150 Bicker-Caarten, Peter, Esq. 30, *Northumberland-place, Bayswater, W.*
1860	Bidder, Geo. Parker, Esq., C.E. 24, *Gt. George-st., S.W.; and Mitcham, Surrey.*
1863	Bigg, Thos., Esq. *Cronstadt-house, Abbey-wood, Kent.*
1859	Bigge, Frederick W., Esq. *Union Club, S.W.*
1850	Bigsby, John J., Esq., M.D. 89, *Gloucester-place, Portman-square, W.*
1858	Birch, Augustus F., Esq., M.A. Assistant Master, Eton College.
1860	Birch, H. W., Esq. 46, *Welbeck-street, Cavendish-square, W.*
1858	Birch, John William, Esq. 9*, *New Broad-st., E.C.; and* 27, *Cavendish-sq., W.*
1859	Birch, Capt. Thomas, R.N. *United Service Club, S.W.*
1862	*Birchill, B. H. H. B., Esq. *The Lawn, Twickenham, S.W.*
1847	160*Bird, James, Esq., M.D. 27, *Hyde-park-square, W.*
1858	Bishop, George, Esq., F.R.A.S. *Union Club, S.W.; and The Meadows, Twickenham, S.W.*
1861	Bishop, James, Esq.
1836	*Blaauw, William H., Esq., M.A., F.S.A., F.Z.S. *Beechlands, near Uckfield, Sussex.*
1860	*Black, Francis, Esq. 6, *North-bridge, Edinburgh.*
1858	Blackett, Henry, Esq. 13, *Great Marlborough-street, W.*
1849	Blackie, W. Graham, Esq., PH. DR. 36, *Frederick-street, Glasgow.*
1861	*Blackney, William, Esq., Assistant-Paymaster, R.N. *H.M.S. 'Actæon,' Millbrook, Devonport.*
1857	Blackstone, Alan C., Esq. *Board of Works, Whitehall-place, S.W.*
1862	*Blackstone, Frederick Elliot, Esq., B.C.L. *British Museum, W.C.*
1854	170 Blaine, D. Roberton, Esq., Barrister-at-Law. 3, *Paper-buildings, Temple, E.C.; and* 8, *Southwick-place, Hyde-park-square, W.*
1857	*Blake, Wollaston, Esq. 8, *Devonshire-place, W.*

Year of Election.	
1859	Blakeley, Capt. Alexr., R.A. 34, *Montpelier-square, Rutland-gate, S.W.*
1857	Blakiston, Captain Thomas, R.A. 28, *Wellington-street, Woolwich, S.E.*
1830	*Blanshard, Henry, Esq., F.R.A.S. 53, *Chancery-lane, W.C.*
1861	*Blanshard, Henry, Esq. *Upper Bedford-place, W.C.*
1857	Blanshard, Richard, Esq. *Fairfield, Lymington, Hants.*
1854	Blencowe, W. Robert, Esq. *The Hook, Lewes.*
1861	Blenkin, William, Esq. *Addlestone, near Chertsey, Surrey.*
1839	*Blewitt, Octavian, Esq. 4, *Adelphi-terrace, Strand, W.C.*
1852	180 Block, Samuel Richard, Esq. *Green-hill, near Whetstone, Herts.*
1864	Blore, Edward, Esq. 4, *Manchester-square, W.*
1861	Bloxsome, Oswald J., Esq. *Addestone-house, Chathill, Northumberland.*
1837	*Blunt, Jos., Esq.
1863	Blunt, Wilfred, Esq.
1858	Bohn, Henry G., Esq. *York-st., Covent-garden, W.C.; and North-end-house, Twickenham, S.W.*
1863	Boileau, Sir John P., Bart. *Brook-street, W.*
1862	Bolton, Capt. Francis John, 12th Regt. *Chatham.*
1861	Bompas, George Cox, Esq. 15, *Stanley-gardens, Kensington-park, W.*
1861	Bonney, Charles, Esq. *Adelaide, Australia.*
1858	190 Bonnor, George, Esq. 49, *Pall-mall, S.W.; and* 2, *Bayswater-terr., Kensington-square, W.*
1859	Borough, Sir Edward, Bart. 32, *Brook-street, Grosvenor-square, W.; and* 4, *Nassau-street, Dublin.*
1845	*Borrer, Dawson, Esq. *Altmont Bullon, Co. Carlow, Ireland.*
1856	Botcherby, Blackett, Esq., M.A. 48, *Brompton-row, S.W.*
1858	*Botterill, John, Esq. *Flower-bank, Burley-road, Leeds.*
1860	Boustead, John, Esq. 34, *Craven-street, Strand, W.C.*
1855	Bovet, Charles, Esq. 30, *Camden-road-villas, N.W.*
1861	Bowen, Charles Christopher, Esq. *Christchurch, Canterbury, New Zealand.*
1854	*Bowen, Sir George Ferguson, K.C.M.G., M.A. *Governor of Queensland, Australia.*
1836	Bower, George, Esq. 6, *Tokenhouse-yard, E.C.*
1862	200 Bowie, John, Esq. *Conservative Club, S.W.*
1833	Bowles, Admiral William, C.B. 8, *Hill-street, Berkeley-square, W.*
1856	Bowman, John, Esq. 9, *King William-street, E.C.*
1862	Boyce, Rev. W. B., Secretary to Wesleyan Missionary Society. 38, *Milner-sq., Islington, N.; and Wesleyan Mission House, Bishopsgate-street, E.C.*
1845	*Boyd, Edward Lennox, Esq., F.S.A. 35, *Cleveland-square, Hyde-park, W.*
1856	Boyne, G. Hamilton-Russell, Viscount. 22, *Belgrave-square, S.W.; Brancepeth-castle, Durham; and Burwarton-hall, Ludlow, Salop.*
1851	Bracebridge, Charles Holte, Esq. *Atherstone, Warwick.*
1858	Braddell, Thomas, Esq. *Magistrate at Penang.*
1862	Braithwaite, Isaac, Esq. 68, *Old Broad-street, E.C.*
1863	*Bramley-Moore, John, Esq., M.P. *Aigburth, near Liverpool.*

Year of Election.	
1857	210 Bramston, Thos. W., Esq., M.P. *Carlton Club, S.W.; and Skreens, Chelmsford, Essex.*
1859	*Brand, James, Esq. 109, *Fenchurch-street, E.C.*
1860	Brassey, T., Esq. 4, *Great George-street, S.W.; and* 56, *Lowndes-square, S.W.*
1857	Brasted, Rev. J. B.
1859	Braybrooke, Philip Watson. *Assistant Colonial Secretary, Ceylon.*
1861	*Brenchley, Julius, Esq. *Oxford and Cambridge Club, S.W.; and Milgate, near Maidstone, Kent.*
1846	Brereton, Rev. C. D., M.A. *Little Massingham, Rougham, Norfolk.*
1833	*Brereton, Rev. John, LL.D., F.S.A. *Bedford.*
1834	*Breton, William Henry, Esq., Lieut. R.N., M.R.I. 15, *Camden-place, Bath.*
1862	Brett, Charles, Esq. 44, *Cleveland-square, W.*
1853	220 Bridges, Nathaniel, Esq. 16, *Southwick-crescent, Hyde-park, W.*
1852	*Brierly, Oswald W., Esq. 8, *Lidlington-pl., Harrington-sq., Hampstead-rd., N.W.*
1861	*Bright, Sir Charles T. 1, *Victoria-street, Westminster, W.; and* 12, *Upper Hyde-park-gardens, W.*
1860	Bright, James, Esq., M.D. 12, *Cambridge-square, Hyde-park, W.*
1854	Brine, Capt. Frederic, R.E. *Army and Navy Club, S.W.; Claremont, Sidmouth; and Hong-Kong, China.*
1856	Brine, Commander Lindesay, R.N. *Army and Navy Club, S.W.; Royal Naval College, Portsmouth; and Claremont, Sidmouth.*
1861	Bristowe, Henry Fox, Esq. 53, *Rutland-gate, S.W.*
1861	Broadwater, Robert, Esq. 3, *Billiter-square, Fenchurch-street, E.C.*
1864	Brodie, G. S., Esq. 27, *Pembridge-square, W.*
1861	Brodie, Walter, Esq. 13, *Delamere Terrace, Hyde-park, W.; and The Gore, Eastbourne, Sussex.*
1861	230 Brodie, William, Esq. *Eastbourne, Sussex.*
1863	*Brodrick, George C., Esq. 32A, *Mount-street, W.*
1838	Brooke, Sir James, K.C.B., D.C.L. *Athenæum Club, S.W.; and Sarawak, Borneo*
1856	Brooke, Captain William, 30th Regt. 1, *Clifton-terrace, Ramsgate.*
1862	Brookes, Thomas, Esq. *Mattock-lane, Ealing, W.*
1856	*Brooking, George Thomas, Esq. 25, *Sussex-gardens, Hyde-park, W.*
1856	*Brooking, Marmaduke Hart, Esq. 5, *Norfolk-crescent, Hyde-park, W.*
1843	*Brooking, Thomas Holdsworth, Esq. 14, *New Broad-street, City, E.C.; and* 5, *Norfolk-crescent, Hyde-park, W.*
1863	Brophy, C. A., Esq. *Sidmouth.*
1863	*Broughall, William, Esq. *Broadwater, Down, Tunbridge-Wells.*
1850	240 Broughton, John, Lord, G.C.B., M.A., F.R.S. 42, *Berkeley-Square, W.; and Erlestoke-park, Westbury, Wilts.*
1859	Broughton, L. P. Delves, Esq. 2, *Tanfield-court, Temple, E.C.*
1856	*Brown, Daniel, Esq. *The Elms, Larkhall-rise, Clapham, S.*
1860	Brown, James, Esq., M.P. *Rossington, Yorkshire.*
1863	Brown, Jas. P., Esq. 80, *Cornhill, E.C.; and Sierra Seara de Cocoes, Minas Geraes, Brazil.*

Year of Election	
1860	*Carver, the Rev. Alfred J., D.D., Master of Dulwich College. *Dulwich, S.*
1858	Casella, Louis P., Esq. 23, *Hatton-garden, E.C.; and South-grove, Highgate, N.*
1863	Cator, A. B., Esq. 17, *Sussex-square, Hyde-park, W.*
1860	320 Cave, Amos, Esq. 109, *New-road, Kennington-park, S.; and Rathbone-pl., Oxford-st., W.*
1857	Cave, Capt. Laurence Trent. 23, *Lowndes-street, Belgrave-square, S.W.*
1858	Cave, Stephen, Esq., M.P. 35, *Wilton-place, S.W.*
1863	Challis, John Henry, Esq. *Reform Club, S.W.*
1858	Champion, John Francis, Esq. *High-street, Shrewsbury.*
1834	*Chapman, Capt. John James, R.A., F.R.S. 33, *Adelaide-square, Bedford.*
1863	Chapman, Spencer, Esq. 47, *Grosvenor-street, W.*
1860	Charlemont, Lord. *Charlemont-house, Dublin.*
1861	Charnock, Richard Stephens, Esq. 8, *Gray's-inn-square, W.C.*
1861	Cheetham, John Frederick, Esq. *Eastwood, Stalybridge.*
1855	330 Cheshire, Edward, Esq. *Conservative Club, S.W.*
1838	*Chesney, Major-General Francis Rawdon, R.A., D.C.L., F.R.S. *Athenæum Club, S.W.; and Ballyardle, Down, Ireland.*
1858	Chetwode, Augustus L., Esq. 7, *Suffolk-street, Pall-mall-east, S.W.; and Chilton-house, Thame, Oxfordshire.*
1858	Childers, Hugh C. E., Esq., M.P. 17, *Prince's-gardens, W.; and Australia.*
1856	Childers, John Walbanke, Esq. *Cantley-hall, near Doncaster.*
1857	*Chimmo, Lieut. William, R.N. 5, *Mansfield-pl., W.; and Regent-st., Glasgow.*
1861	Christian, Capt. Henry, R.N. *Commr. of the Royal Yacht, Portsmouth.*
1854	Christy, Henry, Esq. 103, *Victoria-street, S.W.; and Woodbines, near Kingston, Surrey, S.W.*
1854	*Church, J. W., Esq., B.A. *United University Club, S.W.; and Woodside, Hatfield.*
1830	*Church, W. H., Esq.
1849	340 Churchill, Lord Alfred Spencer, M.P. 16, *Rutland-gate, S.W.*
1856	Churchill, Charles, Esq. 29, *Sussex-square, Hyde-park, W.*
1853	Clarendon, George William, Earl of, K.G., G.C.B. 1, *Grosvenor-crescent, S.W. The Grove, Watford, Herts; and Hindon, Wilts.*
1852	Clark, Daniel, Esq. 49, *Milner-square, Islington, N.*
1863	Clark, Lieut. Alex. J. *Eveswell-house, Maindee, Newport, Monmouthshire.*
1840	*Clark, Sir James, Bart., M.D., F.R.S. *Bagshot-park, Surrey.*
1862	Clark, Latimer, Esq. 1, *Victoria-street, Westminster, S.W.; and Cairo.*
1851	Clark, Rev. Samuel, M.A. *The Vicarage, Bredwardine.*
1859	Clarke, Capt. A., R.E. *Army and Navy Club, S.W.*
1860	Clarke, Rev. Joseph W., B.D., Chaplain R.N. *H.M.S. 'Hawke'*
1855	350*Clarke, Rev. W. B., M.A. *St. Leonard's, Sydney, New South Wales.*
1859	Clarke, Rev. W. Geo., M.A. *Trinity College, Cambridge.*
1862	Claude, Eugéne, Esq. 22, *Park-road, Holloway, N.*
1842	*Clavering, Sir William Aloysius, Bart., M.A. *United University Club, S.W.; Axwell-park, near Gateshead; and Greencroft, Durham.*
1863	Clay, Sir Wm., Bart. *Eaton-square, S.W.*

Year of Election.	
1863	Clayton, Capt. John W., late 15th Hussars. 14, *Portman-square, W.*
1863	Clements, Rev. H. G. *United University Club, S. W.*
1860	Clerk, Capt. Claude. *Military Prison (Queen's Bench) Southwark, S.*
1830	*Clerk, Rt. Hon. Sir George, Bart., D.C.L., F.R.S., &c. *Pennicuik-house, Edinburgh.*
1858	Clermont, Thomas, Lord. *Ravensdale-park, Newry, Ireland.*
1861	360 Clifford, Sir Charles. *Coldham-hall, Suffolk.*
1858	Clifford, Charles Cavendish, Esq., M.P. *House of Lords, S. W.*
1856	Clive, Rev. Archer. *Whitfield, Hereford.*
1863	Clowes, E., Esq. *Reform Club*, 105, *Pall-mall, S. W.*
1854	Clowes, George, Esq. . *Duke-street, Stamford-street, Blackfriars, S.; and Surbiton, Surrey.*
1864	Clowes, George, jun., Esq. *Surbiton, Surrey.*
1854	Clowes, William, Esq. 51, *Gloucester-terrace, Hyde-park, W.*
1861	Clowes, William Charles Knight, Esq. *Duke-street, Stamford-street, Blackfriars, S.; and Surbiton, Surrey.*
1852	Cobbold, John Chevalier, Esq., M.P. *Athenæum Club, S. W.; and Ipswich, Suffolk.*
1859	Cochrane, Capt. the Hon. A., R.N., C.B. *Junior United Service Club, S. W.*
1862	370 Cockerton, Richard, Esq. 12, *Petersham-terrace, South Kensington, W.*
1862	*Cockle, George, Esq. 8, *Ovington-square, Brompton, S. W.*
1859	Cocks, Colonel C. Lygon, Coldstream Guards. *Treverbyn-Vean, near Liskeard.*
1841	*Cocks, Reginald Thistlethwayte, Esq. 43, *Charing-cross, S. W.; and* 22, *Hertford-street, May-fair, W.*
1857	Coghlan, Edward, Esq. *Training Institution, Gray's-inn-road, W.C.*
1862	Coghlan, Gen. William M., R.A. Commandant and Political Agent, *Aden; and Ramsgate, Kent.*
1861	Coghlan, J., Esq., Engr.-in-Chief to the Government. *Bucnos Ayres.*
1838	Colchester, Charles, Lord, Rear-Admiral, D.C.L. 34, *Berkeley-square, W.; and Kilbrooke, Sussex.*
1853	Cole, John Griffith, Esq., M.A., M.R.I. 8, *Charles-street, Berkeley-square, W.*
1841	*Colebrooke, Sir Thomas Edward, Bart., M.P., F.R.A.S. 37, *South-st., Park-lane, W.*
1834	380 Colebrooke, Lt.-General Sir Wm., R.A., M.G., C.B., K.H., F.R.A.S. *Datchet, near Windsor; and United Service Club, S. W.*
1854	Coleman, Everard Home, Esq., F.R.A.S. *Registry and Record Office, Adelaide-place, London-bridge, E.C.*
1848	Coles, Charles, jun., Esq. 86, *Great Tower-street, E.C.*
1835	*Collett, William Rickford, Esq.
1858	Collinson, Henry, Esq. 8, *St. James'-terrace, Paddington, W.*
1855	Collinson, Rear-Admiral Richard, C.B. *Haven-lodge, Ealing, W.; and United Service Club, S. W.*
1861	*Colville, Charles John, Lord. 42, *Eaton-place, S. W.*
1861	Combe, Thomas, Esq., M.A. *University Press, Oxford.*
1864	Conder, John, Esq. *Hallbrooke-house, New Wandsworth, N. W.*
1860	Coningham, William, Esq., M.P. *Kemp-town, Brighton.*
1864	390 Constable, Commander Chas. Golding, I.N. 16, *Cunningham-pl., Maida-hill, W.*

Year of Election.	
1846	Davis, Sir John Francis, Bart., K.C.B., F.R.S., F.R.S.N.A. *Athenæum Club, S. W.; and Hollywood, near Bristol.*
1840	*Dawnay, the Hon. Payan. *Beningborough-hall, Newton-upon-Ouse, Yorkshire.*
1859	De Blaquiere, John, Lord. 9, *Stratford-place, W.*
1852	De Boinville, Chev. Alexander, K.L.H. 25, *Newland-street, Kensington, W.*
1858	De Bourgho, T. J., Esq. 6, *Charing-cross, S. W.*
1856	De Crespigny, Lieut. C., R.N.
1856	De Gex, William Francis, Esq. 8, *Serle-street, Lincoln's-inn, W.C.*
1853	De Grey and Ripon, George Frederick Samuel, Earl. 1, *Carlton-gardens, S. W.; and Studley Royal, Ripon.*
1862	Denham, Capt. Henry Mangles, R.N., C.B. 16, *Delamere-terrace, W.*
1860	470 Denison, Alfred, Esq. 6, *Albemarle-street, W.*
1834	*Denison, His Excellency Sir William Thomas, Lieut.-Col. R.E., F.R.S. *Governor of Madras.*
1836	Denman, Capt. the Hon. Jos., R.N. 17, *Eaton-terrace, S. W.; and H.M. Yacht.*
1833	*Derby, Edward Geoffrey, Earl of, P.C., F.L.S. 23, *St. James's-square, S. W.; and Knowsley-park, Prescott, Lancashire.*
1854	*Devaux, Alexander, Esq. 2, *Avenue-road, Regent's-park, N. W.*
1860	Devine, Thomas, Esq., Chief of Surveys. *Quebec, Upper Canada.*
1837	*Devonshire, William Cavendish, Duke of, LL.D., D.C.L., M.A., F.R.S. *Devonshire-house, Piccadilly, W.; and Hardwicke-hall, Derbyshire.*
1862	Dick, Capt. Charles Cramond. *Exeter, Devon.*
1863	Dick, J. N., Esq., R.N. 2, *Clifton-gardens, Maida-hill, W.*
1861	Dick, Robert Kerr, Esq., Bengal Civil Service. *Oriental Club, W.*
1833	480 Dickenson, John, Esq., F.R.S., F.S.A. 39, *Upper Brook-street, W.; and Abbott's-hill, Hemel-Hempstead.*
1852	Dickenson, John, Esq., jun. *Clarence-chambers*, 12, *Haymarket, S. W.; and Abbott's-hill, Hemel-Hempstead.*
1854	*Dickenson, Sebastian Stewart, Esq., Barrister-at-Law. *Brown's-hill, Stroud, Gloucestershire.*
1860	Dickinson, Rev. C. S. Allen, B.A.
1830	*Dickinson, Francis Henry, Esq., F.S.A. 8, *Upper Harley-street, W.; and Kingweston-park, Somerset.*
1860	Dickinson, Jas. Austen, Esq. *County Surveyor's Office, Mullingar.*
1859	Dickson, A. Benson, Esq. *Chapel-stairs, Lincoln's-inn, W.C.*
1858	Dickson, Charles Hanmer, Esq. *H.B.M. Consul, Súkum Kalé, Black Sea.*
1860	Dickson, Lieut.-Col. Lothian Sheffield. 10, *Stanhope-terrace, Hyde-park, W.*
1843	Dickson, Peter, Esq. 28, *Upper Brook-street, W.*
1860	490 Dietz, Bernard, Esq., of Algoa Bay. 3, *Dorset-square, W.*
1859	Digby, G. Wingfield, Esq. 35, *Brook-street, Grosvenor-square, W.; and Sherborne-castle, Dorset.*
1860	Digby, Lieut.-Col. John Almerus. *Chalmington-house, Cattstock, Dorchester.*
1836	*Dilke, Charles Wentworth, Esq. 76, *Sloane-street, S. W.*
1845	*Dilke, Sir Charles Wentworth, Bart. 76, *Sloane-street, S. W.*

Year of Election.	
1859	*Dilke, Charles Wentworth, Esq. 76, *Sloane-street, S.W.*
1856	Dillon, the Hon. Arthur. 17, *Clarges-street, W.*
1864	Dimsdale, J. C., Esq. 50, *Cornhill, E.C.; and* 52, *Cleveland-square, S.W.*
1840	*Divett, Edward, Esq., M.P. *Bystock, near Exmouth, Devon.*
1861	Dixon, Lieut.-Colonel John. 4, *Craig's-court, S.W.*
1854	Dixon, W. Hepworth, Esq., F.S.A. *Essex-villa, Queen's-road, St. John's-wood, N.W.*
1857	Dobie, John, Esq., R.N. *Junior United Service Club, S.W.; and Club-chambers, S.W.*
1857	Dobie, Robert, Esq., M.D., R.N. 7, *Houghton-pl., Ampthill-sq., Hampstead-rd., N.W.*
1841	*Dodd, George, Esq., F.S.A. 9, *Grosvenor-place, S.W.*
1854	Dodson, John George, Esq., M.P. 6, *Seamore-place, Mayfair, W.*
1862	Dolben, Commr. Wm. Digby Mackworth, R.N. *H.M.S. 'Bloodhound,' W. Coast of Africa.*
1854	*Dollond, George, Esq. *St. Paul's-churchyard, E.C.*
1854	Domville, William T., Esq., M.D., R.N. *Army and Navy Club, S.W.*
1853	Donaldson, Sir Stuart A. 22, *Rutland-gate, S.W.; and Sydney, Australia.*
1858	Donne, John, Esq. *Instow, North Devon.*
1861	Donoughmore, R. J. Hely-Hutchinson, Earl of. 52, *South Audley-street, W.; Knocklofty-house, Tipperary; and Palmerston house, near Dublin.*
1850	Dover, John William, Esq. 124, *Fenchurch-street, E.C.*
1854	Dower, John, Esq. 108, *Fleet-street, E.C.*
1853	Doyle, Sir Francis Hastings C., Bart. *Custom-house, E.C.*
1845	*Drach, Solomon Moses, Esq., F.R.A.S. 39, *Howland-street, Fitzroy-square, W.*
1846	Drummond, Lieut.-General John. *The Boyce, Dymock, Gloucestershire.*
1846	Drury, Capt. Byron, R.N. *The Thicket, Southsea.*
1857	Dublin, His Grace the Archbishop of. *Dublin.*
1851	*Du Cane, Major Francis, R.E. 64, *Lowndes-square, S.W.*
1851	*Ducie, Henry John, Earl, F.R.S. 30, *Prince's-gate, S.W.*
1859	Ducket, Clark A., Esq., M.D., Surg. R.N. *H.M.S. 'Geyser;' and* 33, *South-town-road, Great Yarmouth.*
1859	Duckworth, Henry, Esq. 2, *Gambier-terrace, Liverpool.*
1862	Duff, A. Groves, Esq., M.D., Assist.-Surg. Bengal Army. 1, *Buckingham-terrace, Edinburgh; and Oakmount, Lasswade, N.B.*
1860	*Duff, Mountstuart Elphinstone Grant, Esq., M.P. *Eden, near Banff, Scotland.*
1863	Duncan, Lieut. Francis, R.A., M.A., F.R.S. *Woolwich, S.E.*
1861	*Duncan, George, Esq. 45, *Gordon-square, W.C.*
1840	*Dundas, Right Hon. Sir David, Q.C. 13, *King's-Bench-walk, Temple, E.C.; and Ochtertyre, Co. Perth.*
1860	Dunell, Henry James, Esq. 4, *Upper Hyde-park-gardens, W.*
1859	*Dunlop, R. H. Wallace, Esq., C.B., Indian Civil Service.
1860	*Dunmore, Charles Adolphus Murray, Earl of. 17, *Carlton-house-terrace, S.W.*
1857	*Dunraven, Edwin Richard, Earl of, F.R.S. *Adare-manor, Limerick; and Dunraven-castle, Glamorganshire.*
1856	Duprat, Chevalier Alfredo. *H.M.F. Arbitrator, Cape Town, Cape of Good Hope; and* 4, *Vicarage-gardens, Campden-hill, W.*

Year of Election.	
1861	Duprée, Thos. W., Esq., M.D. *Panama.*
1852	D'Urban, Colonel W. J. *Deputy Quartermaster-General, Canada; and Junior U. S. Club, S.W.*
1861	Dyke, Commander Peché H., R.N. 3, *Southwick-place, Hyde-park, W.*
1857	Eardley, Sir E. G. Culling. *Hungershall-park, Tunbridge-Wells; and Belvedere, Erith.*
1854	Eardley-Wilmot, Capt. A. P., R.N., C.B. *H.M.S. 'Nile,' Queenstown.*
1856	Eardley-Wilmot, Col. F., M.R.A. *Sherborne, Dorset; and Bridje, Canterbury.*
1857	Eastwick, Captain W. J. 12, *Leinster-terrace, Hyde-park, W.*
1863	Eaton, F. A., Esq. *Canon-hill, Maidenhead.*
1862	540 *Eaton, Henry William, Esq. 16, *Prince's-gate, Hyde-park, W.*
1861	Eber, General F. 33, *St. James's-square, S.W.*
1862	Ebury, Lord. 107, *Park-street, Grosvenor-square, W.; and Moor-park, Herts.*
1862	Eden, Rear-Adm. Charles, C.B. *Admiralty, S.W.; and 20, Wilton-place, S.W.*
1858	Edge, Rev. W. J., M.A. *Benenden-vicarage, near Staplehurst, Kent.*
1863	Edgeworth, M. P., Esq., BENG.C.S. *Mastrim-house, Anerly, S.*
1861	*Edwards, Henry, Esq. 53, *Berkeley-square, W.*
1860	Edwards, Major James B., R.E. *Junior United Service Club, S.W.*
1860	Egerton, Colonel the Hon. Arthur. *Bridgewater-house, S.W.*
1857	Egerton, Commander Charles Randell, R.N. 7, *Rutland-gate, S.W.*
1853	550 Egerton, Captain the Hon. Francis, R.N. *Bridgewater-house, S.W.; and H.M.S. 'St. George.'*
1863	*Elder, George, Esq. *Knock-castle, Ayrshire.*
1860	Elderton, Edward M., Esq. 40, *St. George's-road, Pimlico, S.W.*
1862	Elkington, Lieut.-Col. J. H. F. *Army and Navy Club, S.W., and Park-street, Bath.*
1845	Ellenborough, Edward, Earl of, G.C.B. 110, *Eaton-square, S.W.; and Southam-house, near Cheltenham.*
1863	Ellerton, John L., Esq. 6, *Connaught-place, Hyde-park, W.*
1860	Elliot, George, Esq., C.E. *The Hall, Houghton-le-Spring, near Fence Houses, Durham.*
1857	Elliot, Capt. L. R. *La Mailleraye-sur-Seine, Seine Inférieure.*
1830	*Elliott, Rev. Charles Boileau, M.A., F.R.S. *Tattingstone, Suffolk.*
1861	Ellis, Rev. William. *Madagascar.*
1853	560 Elphinstone, Major Howard C., R.E. *Buckingham-palace, S.W.*
1857	Elton, Sir Arthur H., Bart. *Athenæum Club, S.W.; and Clevedon-court, Somersetshire.*
1862	*Emanuel, Harry, Esq. 70, *Brook-street, Hanover-square, W.*
1863	Emslie, John, Esq. 47, *Gray's-inn-road, W.C.*
1830	Enderby, Charles, Esq., F.R.S., F.L.S. 13, *Great St. Helen's, E.C.*
1860	Enfield, Edward, Esq., F.S.A. 19, *Chester-terrace, Regent's-park, N.W.*
1863	Engleheart, Gardner D., Esq. 1, *Eaton-place-south, S.W.*

Year of Election	
1856	Entwisle, John, Esq. 1, *Russell-square, W.C.*
1861	Erroll, William Harry Hay, Earl of. 3, *Grafton-street, W.; Pembroke-lodge, Richmond-park, S.W.; and Staines-castle, Aberdeenshire.*
1853	*Erskine, Henry David, Esq. *Travellers' Club, S.W.; and* 108, *Gloucester-place, Portman-square, W.*
1852	570 Erskine, Rear-Admiral John Elphinstone, C.B. *H.M.S. 'Edgar;' 1 L, Albany, W., and Cardross, Stirling, N.B.*
1857	*Esmeade, G. M. M., Esq. 29, *Park-street, Grosvenor-square, W.*
1850	Espinasse, Major J. W., 12th Regt. *Spike-island, Queenstown, Ireland.*
1851	Evans, Rev. Charles. *King Edward VI. Grammar School, Birmingham.*
1857	Evans, F. J., Esq., Staff Commander, R.N., F.R.S., F.R.A.S. 4, *Wellington-terrace, Charlton, Blackheath, S.E.*
1830	*Evans, Rear-Admiral George. 1, *New-street, Spring-gardens, S.W.; and Englefield-green, Chertsey.*
1857	Evans, Thos. Wm., Esq., M.P. 1, *Dartmouth-street, Westminster, S.W.; and Allestree-wall, Derby.*
1830	*Evans, W. Esq.
1861	Evelyn, Lt.-Colonel George P. 4, *Onslow-crescent, S.W.*
1851	*Evelyn, William J., Esq., F.S.A. *Wotton-house, near Dorking.*
1845	580*Everest, Sir Geo., Bengal Art., K.C.B., F.R.S., &c. 10, *Westbourne-street, Hyde-park, W.*
1830	*Everett, James, Esq., F.S.A.
1859	Ewart, William, Esq., M.P. 6, *Cambridge-square, W.*
1856	Ewing, J. D. Crum, Esq. 21, *Birchin-lane, E.C.*
1857	Eyre, Edward J., Esq., Lt.-Gov. of Antigua.
1861	Eyre, George E., Esq. 59, *Lowndes-square, S.W.*
1856	Eyre, M.-Gen. Vincent, C.B. *Athenæum Club, S.W.; and India.*
1861	Fairbairn, William, Esq., C.E., F.R.S. *Manchester.*
1856	Fairholme, George Knight, Esq. *Union Club, S.W.; and Ravenswood, Melrose, N.B.*
1838	Falconer, Thomas, Esq. *Usk, Monmouthshire.*
1857	590 Falkland, Lucius Bentinck, Viscount. *Shutters'elfe, Yorkshire.*
1855	*Fanshawe, Capt. E. G., R.N. 27, *Rutland-gate, Hyde-park, S.W.*
1863	*Farrer, W. Jas, Esq. 24, *Bolton-street, Piccadilly, W.*
1863	*Faunthorpe, J. P., Esq. *Training College, Battersea.*
1853	*Fayrer, Joseph, Esq., M.D. *Calcutta.*
1858	Fazakerley, J. N., Esq. 17, *Montagu-street, Portman-square, W.*
1856	Ferguson, William, Esq. 2, *St. Aidan's-terrace, Birkenhead.*
1863	Fergusson, Alex., Esq. *Champion-hill, Camberwell, S.*
1840	*Fergusson, James, Esq., F.R.A.S. 20, *Langham-place, W.*
1860	Ferro, Don Ramon de Silva, Chilian Consul General. 43, *Moorgate-street, E.C.*
1830	600 Findlay, Alexander, Esq. *Hayes, Kent, S.E.*
1844	Findlay, Alex. George, Esq. 53, *Fleet-street, E.C.; and Hayes, Kent, S.E.*

Year of Election.		
1862		Finnis, Thomas Quested, Esq., Alderman. *Wanstead, Essex, N.E.*
1859		Fisher, Anthony L., Esq., M.D. 14, *York-place, Baker-street, Portman-square, W.*
1863		Fisher, John, Esq. 60, *St. James's-street, S.W.*
1859		Fisher, Robert L., Esq. 49, *St. James's-street, S.W.*
1861		Fitton, Edward B., Esq. 6, *Gloucester-crescent, Hyde-park, W.*
1857		*Fitzclarence, Lieut. the Hon. George, R.N. *Albany-chambers, W.*
1863		Fitzgerald, J. F. V., Esq. 11, *Chester-square, S.W.*
1861		Fitzgerald, Captain Keane. 2, *Portland-place, W.*
1860	610	Fitzmaurice, Lieut. the Hon. Frederick.
1864		Fitzpatrick, Lieut. F. 2, *Northumberland-place, Bayswater, W.*
1859		Fitz-Roy, George Henry, Esq. 51, *Portland-place, W.*
1830		Fitz-Roy, Vice-Admiral Robert, F.R.S. *Board of Trade, S.W.; Athenæum Club, S.W.; and* 38, *Onslow-sq., Brompton, S.W.*
1857		Fitzwilliam, the Hon. C. W., M.P. 60, *St. James's-street, S.W.*
1837		*Fitzwilliam, William Thomas, Earl. 4, *Grosvenor-square, W.; and Wentworth-house, Rotherham, Yorkshire.*
1863		Fleming, G., Esq. *South Camp, Aldershot.*
1861		*Fleming, John, Esq. 7, *Mincing-lane, E.C.*
1853		*Flemyng, Rev. Francis P. *Glenfeulan, near Helensburgh, Glasgow.*
1862		Fletcher, John Charles, Esq. *Dale-park, Arundel; and Eaton-place, S.W.*
1857	620	Fletcher, Thomas Keddey, Esq. *Union-dock, Limehouse, E.*
1864		Flower, Capt. L. 19, *Gt. George-street, S.W.; and Banstead, Surrey.*
1863		Foley, Col. the Hon. St. George, C.B. *Albany, Piccadilly, W.*
1851		Foord, John Bromley, Esq. 52, *Old Broad-street, E.C.*
1860		Forbes, Commander Charles S., R.N. *Army and Navy Club, S.W.*
1863		Forbes, Lieut. C. J. F. Smith. *Cappoquin, co. Waterford, Ireland.*
1860		Forbes, the Hon. Horace Courtenay. 4, *St. Andrew's-place, Regent's-park, N.W.*
1845		Forster, Rev. Charles, B.D. *Stisted-rectory, Essex.*
1839		*Forster, William Edward, Esq. *Burley, near Otley.*
1861		Forsyth, William, Esq., Q.C. 61, *Rutland-gate, S.W.*
1858	630	Fortescue, Chichester S., Esq., M.P. 7, *Carlton-gardens, S.W.*
1864		Fortune, C. F., Esq. *Trinidad, West Indies.*
1861		*Fortescue, Hon. Dudley F., M.P. 9, *Hertford-street, W.*
1864		Foster, Capt. W. J. *Stubington-house, Fareham, Hants.*
1850		*Fowler, Robert N., Esq., M.A. 50, *Cornhill, E.C.; and Tottenham, N.*
1863		Fowler, J. T., Esq. *Government Inspector of Schools, Adyar, Madras, India.*
1864		Fox, Arthur Douglas, Esq., C.E. 20, *Clarges-street, Mayfair, W.; and* 8, *New-street, Spring-gardens, S.W.*
1859		Fox, Lieut.-Colonel A. Lane. *Assistant Quartermaster-General, Cork.*
1830		*Fox, Lt.-Gen. C. R. *Travellers' Club, S.W.; and* 1, *Addison-rd., Kensington, W.*
1860		Fox, Thos., Esq., M.D. *Inspector-General of Hospitals, North Camp, Aldershot.*
1861	640	Franklin, Joseph Lewis, Esq. 7, *Albemarle-street, W.*
1860		Franks, Charles W., Esq. 5, *John-street, Berkeley-square, W.*

Year of Election.	
1854	Fraser, Charles, Esq. 54, *Upper Hyde-park-gardens, W.*
1860	Fraser, Thos., Esq. *Literary Sec., Hudson Bay Co., Hudson-bay-house, E.C.*
1860	Freeman, Daniel Alex., Esq., Barrister-at-law. 1, *Pump-court, Temple, E.C.*
1859	Freeman, H. Stanhope, Esq. *Governor and Commander-in-Chief, Lagos, W. Africa; and* 4, *Royal-crescent, Notting-hill, W.*
1862	Fremantle, Vice-Admiral Sir Charles Howe, K.C.B. 57, *Grosvenor-street, Grosvenor-square, W.*
1863	Fremantle, Commander Edmund Robert, R.N. 4, *Upper Eccleston-street, S.W.*
1856	Fremantle, Rt. Hon. Sir Thomas F., Bart. 4, *Upper Eccleston-street, Belgrave-square, S.W.*
1852	French, Dr. James, C.B. *Inspector-General of Hospitals, Graham's Hotel, Edinburgh.*
1850	Frere, Bartle John Laurie, Esq. 45, *Bedford-square, W.C.*
1839	*Frere, George, Esq., jun. *Cape of Good Hope; and* 45, *Bedford-square, W.C.*
1842	Frere, William Edw., Esq., F.R.A.S. *Bombay; and* 45, *Bedford-square, W.C.*
1853	Frith, John Griffith, Esq. 13, *Wimpole-street, W.; and* 11, *Austin Friars, E.C.*
1859	Fryer, William, Esq. 39, *Marlborough-hill-gardens, St. John's Wood, N.W.*
1863	Fuidge, William, Esq. 5, *Park-row, Bristol.*
1855	Fuller, John, Esq.
1860	Fussell, Rev. J. G. Curry. 16, *Cadogan-place, S.W.*
1861	Fynes Clinton, Rev. Charles J., M.A. 39, *Bedford-square, W.C.; and Cromwell, Notts.*
1863	*Gabrielli, Antoine, Esq. 6, *Queen's-gate-terrace, Kensington, W.*
1858	Gaisford, Thomas, Esq. *Travellers' Club, S.W.*
1861	Gallagher, John, Esq., M.D. *Reform Club, S.W.; and* 109, *Westbourne-terrace, W.*
1855	*Galloway, John James, Esq.
1848	*Galton, Capt. Douglas, R.E. 12, *Chester-street, Grosvenor-place, S.W.*
1850	*Galton, Francis, Esq., M.A., F.R.S. 42, *Rutland-gate, S.W.; and* 5, *Bertie-terrace, Leamington.*
1854	*Gammell, Major Andrew. *Drumtochty, Kincardineshire, N.B.*
1859	Gammie, George, Esq. *Shotover-house, Wheatley, Oxon.*
1861	Garden, Robert Jones, Esq. 63, *Montagu-square, W.*
1863	Gardyne, D. J. B. Esq. *Trinity College, Oxford.*
1833	Gascoigne, Capt., Ceylon Rifles. *Athenæum Club, S.W.*
1863	Gascoigne, Frederic, Esq. *Parlington, Yorkshire.*
1859	*Gassiot, John P., Jun., Esq. 6, *Sussex-place, Regent's-park, N.W.*
1838	*Gawler, Colonel George, K.H. *United Service Club, S.W.; and* 4, *Beresford-place, Southsea.*
1859	Gerstenberg, Isidore, Esq. 11, *Warnford-court, Throgmorton-street, E.C.*
1859	*Gibbs, H. Hucks, Esq. *St. Dunstan's, Regent's-park, N.W.*
1857	Gilchrist, John, Esq. 48, *Porchester-terrace, W.*
1855	Gillespie, Alexander, Esq. *Heathfield, Hersham, Esher, Surrey.*

Year of Election.		
1857		Gillespy, Thomas, Esq. *Brabant-court, Philpot-lane, E.C.*
1863		*Gillett, William, Esq. 28, *Bedford-square, W.C.*
1861		Gilliat, Alfred, Esq. *Longham-house, near Wimborne, Dorset.*
1863	680	Gillies, Robert, Esq., C.E. *Dunnedin, Otago, New Zealand.*
1836		Gladdish, Col. William. *Bycliffes, Gravesend.*
1863		Gladstone, J. H., Esq. 28, *Pembridge-gardens, W.*
1862		*Gladstone, Robert Stuart, Esq. 11, *New Broad-street, E.C.*
1846		*Gladstone, William, Esq. 57½, *Old Broad-street, E.C.*
1860		Glascott, Lieut. Adam Giffard, R.N., Acting Commissioner on the Turko-Persian Frontier. *British Embassy, St. Petersburg; and 4, Clarence-villas, St Mary's-grove, Richmond, S. W.*
1857		Gleig, Rev. G. R., M.A. *Chaplain-General, Chelsea-hospital, S. W.*
1854		Glen, Joseph, Esq., Mem. Geogr. Soc. of Bombay. *Oriental Club, W.*
1857		Glover, Lieut. John H., R.N. *Lagos; and Army and Navy Club, S. W.*
1860		Glyn, Capt. H. Carr, R.N. 1, *Eccleston-street, Belgrave-square, S. W.*
1862	690	Goddard, James, jun., Esq. 14, *Mincing-lane, E.C.*
1858		Goldsmid, Frederick D., Esq. 20, *Portman-square, W.*
1863		Goldsmid, Frederick John. *Harrow-on-the-hill; Southborough, Kent; and United Service Club, S. W.*
1861		Goldsmid, Julian, Esq. 20, *Portman-square, W.*
1861		Gooldin, Joseph, Esq. 22, *Leinster-gardens, Hyde-park, W.*
1860		Gooch, Thomas Longridge, Esq. 101, *Inverness-terrace, Bayswater, W.*
1863		*Goodenough, Capt. J. G., R.N. *Junior U. S. Club, S. W.*
1864		*Goodenough, Major W., R.A. *Staff-college, Sandhurst.*
1856		Gordon, Alexander, Esq., C.E. *37a, Sutherland-street, Pimlico, S. W.*
1856		*Gordon, Colonel the Hon. Alexander H., C.B. *Argyll-house, Regent-street, W.*
1860	700	Gordon, the Honourable Arthur. 7, *Argyll-street, W.*
1858		Gordon, Capt. Charles G., R.E. *Hong-Kong, China.*
1860		Gordon, Rev. Cosmo Reid, M.A., F.S.A. 9, *Greenhill-st., Greenheys, Manchester*
1854		Gordon, Harry George, Esq. 1, *Clifton-place, Hyde-park-gardens, W.; and Killiechassie, Dunkeld, Perthshire.*
1856		Gordon, Admiral the Honourable John. 28, *Queen Anne-street, W.*
1853		Gordon, Vice-Admiral Robert. *United Service Club, S. W.*
1853		Gore, Montagu, Esq. *Palace-chambers, 88, St. James's-street, S. W.*
1853		Gore, Richard Thomas, Esq. 6, *Queen-square, Bath.*
1853		Gorman, John, Esq., M.D. 39, *Harewood-square, N. W.*
1856		Gosling, Fred. Solly, Esq. 18, *New-street, Spring-gardens. S. W*
1862	710	Goss, Samuel Day, Esq., M.D. 24, *Newington-place, Kennington-park.*
1835		Gould, Lieut.-Colonel Francis A., R.E. *Buntingford, Herts.*
1846		Gould, John, Esq., F.R.S., F.L.S. 26, *Charlotte-street, Bedford-square, W.C.*
1860		Gould, Nathaniel, Esq., F.S.A. 4, *Tavistock-square, W.C.*
1858		Graham, Cyril C., Esq. 9, *Cleveland-row, St. James's, S. W.; and Debroe-house, Watford, Herts.*

Year of Election	
1864	Grant, Alexander, Esq. *Oakfield House, Hornsey, N.*
1861	Grant, Daniel, Esq. 11, *Warwick-road, Upper Clapton, N.*
1860	Grant, Capt. James A. *East India U. S. Club, S.W.; Dingwall, Rosshire, N.B.; and East African Expedition.*
1861	Grant, Colonel W. L., care of Capt. Ellis, *Army and Navy Club, S.W.*
1860	Grantham, Capt. James, R.E. *Scawby, Brigg, Lincolnshire; and Royal Engineer Office, Devonport.*
1830	720*Gray, John Edw., Esq., PH.D., F.R.S., Z.S. and L.S. *British Museum, W.C.*
1862	Greathed, Lieut.-Colonel Wilberforce, W. H., C.B. *Horse Guards, Whitehall, S.W.*
1863	Greaves, Rev. Richard, rector of Tooting. *Tooting, S.*
1861	Green, Capt. Francis. 89, *Eccleston-square, S.W.*
1830	Greene, Thomas, Esq. *Whittington-hall, near Burton, Westmoreland.*
1857	*Greenfield, W. B., Esq. 59, *Porchester-terrace, Hyde-park, W.; and Union Club, S.W.*
1858	Gregory, Charles Hutton, Esq., C.E. 1, *Delahay-street, Westminster, S.W.*
1860	*Gregory, Francis Thomas, Esq. *Queensland; and Castle-hill, Wycombe.*
1858	*Gregory, Isaac, Esq. *Chorlton Hall, Victoria-park, Manchester.*
1861	*Gregson, Samuel, Esq., M.P. 32, *Upper Harley-street, W.*
1857	730*Grellet, Henry Robert, Esq. 7, *Lloyd-street, Lloyd-square, E.C.*
1859	Grenfell, Chas. Pascoe, Esq., M.P. 38, *Belgrave-square, S.W.*
1858	Grenfell, Pascoe St. Leger, Esq. *Maesteg-house, Swansea.*
1853	Grenfell, Riversdale W., Esq. 27, *Upper Thames-street, E.C.*
1830	*Greswell, Rev. Richard, M.A., F.R.S. 39, *St. Giles, Oxford.*
1837	*Grey, Sir George, K.C.B. *Governor & Commander-in-Chief, New Zealand.*
1844	*Grey, Ralph Wm., Esq., Commissioner of Customs. 47, *Belgrave-sq., S.W.; and Chipchase-castle, Hexham.*
1862	Griffin, James, Esq. *Queen-street, Portsea; and Coslam, Hants.*
1861	*Griffith, Daniel Clewin, Esq. 10, *Gower-street, W.C.*
1839	Griffith, John, Esq. 16, *Finsbury-place South, E.C.*
1836	740 Griffith, Richard Clewin, Esq. 10, *Gower-street, W.C.*
1863	Griffith, Sir Richard. 20, *Eccleston-square, S.W.*
1859	Grimston, the Hon. and Rev. Francis S. *Wakes Colne, Halstead.*
1855	Grindrod, R. B., Esq., M.D., LL.D., F.L.S., &c. *Townsend-house, Malvern.*
1861	Grosvenor, Lord Richard. 33, *Upper Grosvenor-street, W.*
1858	Grote, George, Esq. 12, *Savile-row, W.*
1857	Gruneisen, Charles Lewis, Esq. 16, *Surrey-street, Strand, W.C.*
1862	Gunn, F. L. G., Esq., M.D., Army Medical Staff; *Bathurst, Gambia, W. Africa;* 20, *Eversholt-street, N.W.; and* 346, *Bath-crescent, Glasgow.*
1861	Gunnell, Commander Edmund H., R.N. *Army and Navy Club, S.W.;* 21, *Argyll-road, Campden-hill, W.*
1830	*Gurney, Hudson, Esq., F.R.S., F.S.A., F.R.S.N.A. 9, *St. James's-square, S.W.; and Keswick-hall, near Norwich.*
1859	750*Gurney, John H., Esq., M.P. *Calton-hall, Norwich.*

Year of Election.	
1857	Gurney, Samuel, Esq., M.P. 25, *Prince's-gate, Hyde-park, S.W.; and Carshalton, Surrey.*
1862	Guthrie, James Alexander, Esq. 30, *Portland-place, W.*
1863	Hadfield, Wm, Esq., Secretary to the Buenos Ayres Railway Company. 11, *Inverness-road, Bayswater, W.*
1863	Hadow, P. D., Esq. *Sudbury-priory, Middlesex.*
1860	Haliday, Lt.-Col. William Robert. *United Service Club, S.W.*
1853	*Halkett, Rev. Dunbar S. *Little Bookham, Surrey.*
1853	*Halkett, Lieut. Peter A., R.N. *Windham Club, S.W.*
1861	Hall, Charles Hall, Esq. 54, *Portland-pl., W.; and Watergate, near Emsworth.*
1863	Hall, Henry, Esq. 109, *Victoria-street, S.W.*
1862	760 Hall, James Tebbutt, Esq. *Fore-street, Limehouse, E.*
1863	Hall, Thomas F., F.C.S. *Ellerker-house, Richmond, S.W.*
1853	Hall, Admiral William Hutcheson, R.N., C.B., F.R.S. *United Service Club, S.W.; and* 48, *Phillimore-gardens, Kensington, W.*
1864	Halliday, Sir Fred, K.C.B. 23, *Cleveland-square, Hyde-park, W.*
1856	Halloran, Alfred L., Esq., Master R.N. 3, *Navy-terr., Torpoint, nr. Devonport.*
1858	Halloran, Arthur B., Esq. *Principal of the South Devon Collegiate School, Heavitree, Exeter.*
1862	Hamilton, Archibald, Esq. *South Barrow, Bromley, Kent, S.E.*
1861	Hamilton, Lord Claude. 19, *Eaton-sq., S.W.; and Barons-court, Co. Tyrone.*
1857	Hamilton, Edward Terrick, Esq. 32, *Upper Brook-street, W.*
1830	*Hamilton, Capt. Henry G., R.N. 71, *Eccleston-square, S.W.*
1861	770 Hamilton, Col. Robert William, Grenadier Guards. 18, *Eccleston-square, S.W.*
1863	Hamilton, R., Esq. 51, *Welbeck-street, W.*
1830	Hamilton, Terrick, Esq. 121, *Park-street, Grosvenor-square, W.*
1846	Hamilton, Rear-Admiral W. A. Baillie. *Macartney-house, Blackheath, S.E.*
1837	Hamilton, Wm. John, Esq., F.R.S. 23, *Chesham-place, S.W.*
1862	*Hanbury, Robert, Esq., M.P. 10, *Upper Grosvenor-street, W.*
1853	*Hand, Captain George S., R.N. *United Service Club, S.W.; and H.M.S. 'Sampson.'*
1860	*Handley, Benjamin, Esq., Assistant-Commr. Turko-Persian Frontier. *British Embassy, St. Petersburg; and* 27, *Essex-street, Strand, W.C.*
1861	*Hankey, Blake Alexander, Esq. 38, *Portland-place, W.*
1857	Hankey, Thomson, Esq., M.P. 45, *Portland-place, W.*
1837	780 *Hanmer, Sir J., Bart., M.P., F.R.S. *Hanmer-hall and Bettisfield-park, Flintshire.*
1839	*Hansard, Henry, Esq. 14, *Park-square, Regent's-park, N.W.*
1840	*Harcourt, Egerton V., Esq. *Whitwell-hall, York.*
1864	*Hardie, Gavin, Esq. 113, *Piccadilly, W.*
1861	Hardinge, Henry, Esq., M.D. 18, *Grafton-street, Bond-street, W.*
1862	Hardman, William, Esq., M.A. 27, *Gordon-street, Gordon-square, W.C.*
1864	Hardwicke, B. Esq. 43, *Russell-square, W.C.*
1855	Harris, Archdeacon the Hon. C. A. *Bremhill Vicarage, Chippenham.*

Year of Election.		
1853		Harris, Capt. the Hon. E. A. J., R.N. *H.B.M.'s Minister Plenipotentiary, Berne.*
1852		Harris, George Frederick, Esq., M.A. *Harrow-park, Middlesex, N.W.*
1859	790	Harris, Capt. Henry, H.C.S. 35, *Gloucester-terrace, Hyde-park, W.*
1863		Harrison, Chas., Esq. *Lavrie-park, Sydenham; and* 3, *Gt. Tower-st., E.C.*
1859		Harrison, C. H. Rogers, Esq., F.R.C.S. 13, *Lansdowne-road, Clapham-road, S.*
1838		Harrowby, Dudley, Earl of. *Sandon-ho., Lichfield; and Norton, Gloucestershire.*
1863		Hart, Percy M., Esq. 5, *Binfield-road, Clapham-road, S.*
1854		*Hartland, Frederick D., Esq., F.S.A., &c. *The Oaklands, near Cheltenham.*
1863		Harvey, Charles, Esq. *Ruthgate-cottage, Streatham, S.*
1864		Harvey, John, Esq. *Ickwell Bury, Biggleswade.*
1864		Harvey, John, Esq. 7, *Mincing-lane, E.C.*
1846		Harvey, W. S., Esq., R.N. *H.M.S. 'Hannibal,' Mediterranean; and* 14, *Great George-street, S.W.*
1859	800	Harwood, H. Harwood, Esq. 29, *Cleveland-square, Hyde-park, W.*
1858		Hawker, Edward J., Esq. 37, *Cadogan-place, S.W.*
1834		Hawkins, Francis Bisset, Esq., M.D., F.R.S. 29, *Upper Harley-street, W.; and Lewell-lodge, Dorchester.*
1857		Hawkins, Commander Frank K., R.N. *Army and Navy Club, S.W.*
1840		*Hawkins, John, Esq.
1858		*Hawkins, Lieut.-Col. J. Summerfield, R.E. *N.W. American Boundary Commission; and* 2, *Victoria-street, Westminster, S.W.*
1861		Hawksley, Thomas, Esq., C.E. 19, *Upper Woburn-place, Tavistock-sq., W.C.*
1860		Haworth, Frederick, Esq. 9, *Eccleston-street, S.W.*
1852		*Hay, Capt. Sir J. C. Dalrymple, Bart., R.N., M.P. *U.S. Club, S.W.; Dunragit, Glenluce; and Harrow-on-the-hill, N.W.*
1863		*Hay, Lord John.
1859	810	Hay, Major W. E. *Care of Lady Mary Hay, Linden-lodge, Loan-head, near Edinburgh.*
1853		Hayward, Robert Newton, Esq. *Porchester-villa, Grange-loan, Edinburgh.*
1862		Head, Alfred, Esq. 13, *Craven-hill-gardens, Bayswater, W.*
1859		Heard, G. G. Gilbert, Esq., F.S.A. 18, *Devonshire-terrace, Hyde-park, W.*
1856		Heath, J. Benjamin, Esq., F.R.S., F.S.A., Consul for Sardinia. 31, *Old Jewry, E.C.*
1861		Hector, Alexander, Esq. 6, *Stanley-gardens, Bayswater, W.*
1861		Hector, James, Esq., M.D.
1859		Hellmann, Christian, Esq. *Club-chambers, Regent-street, S.W.*
1859		Hely, Hovendon, Esq. *Australian Club, Sydney.*
1862		Hemans, Geo. Willoughby, Esq., C.E. 13, *Queen's-square, Westminster, S.W.*
1856	820	Henderson, Andrew, Esq. 102, *Gloucester-place, Portman-square, W.*
1837		*Henderson, James, Esq. *Littlewood-park, Forbes, Aberdeenshire.*
1853		Henderson, John, Esq. *Conservative Club, S.W.; and Valparaiso.*
1864		Henderson, R., Esq. *Randal's-park, Leatherhead, Surrey, S.*
1852		Henderson, William, Esq. 5, *Stanhope-street, Hyde-park-gardens, W.*
1844		*Heneage, Edward, Esq. *Stag's-end, Hemel Hempstead.*

Year of Election.	
1863	Heneage, P. F., Esq. 39, *Charles-street, Berkeley-square, W.*
1861	Henn, Rev. J., B.A., F.G.S., Head Master of the Commercial Schools. *Stretford New-road, Manchester.*
1860	Hennessey, J. B. N., Esq. *1st Asst. Trig. Survey of India, Dehra in the Dhoon, N.W. Provinces, India.*
1862	Henry, Capt. R. J. *Army and Navy Club, S.W.*
1838	830*Henry, Wm. Chas., Esq., M.D., F.R.S. *Huffield, near Ledbury, Herefordshire.*
1861	*Henty, Douglas, Esq. *Chichester.*
1834	Herbert, Jacob, Esq. *Trinity-house, Tower-hill, E.C.*
1857	Herd, Captain D. J. 2, *Norway-house, Limehouse, E.*
1858	Hertslet, Edward, Esq. *Librarian, Foreign Office, S.W.; and Belle-vue-house, Richmond, S.W.*
1841	Hessey, James Augustus, Esq. *Manningford Bruce, Pewsey, Wilts.*
1861	Heugh, John, Esq. *Firwood, Alderley-edge, Cheshire.*
1858	Hewett, Capt. J. A. Napier. *Velindie-house, Trevine, Haverfordwest.*
1856	Hewitt, James, Esq. *Rottingdean, Brighton.*
1859	Hewitt, Commander William Nathan Wright, R.N. *H.M.S. 'Viper,' W. Coast of Africa.*
1840	840*Heywood, James, Esq., M.P., F.R.S. *Athenæum Club, S.W.; and 26, Kensington-palace-gardens, W.*
1860	Heyworth, Capt. Lawrence, 4th Royal Lancashire. *Jun. United Service Club, S.W.*
1853	Hickey, Edwin A., Esq. *Beech-hurst, Hayward's-heath.*
1856	Hill, Arthur Bowdler, Esq. *South-road, Clapham-park, Surrey, S.*
1857	Hill, Rev. C. Croft, M.A. *Southfield, Clapham-park, Surrey, S.*
1854	Hill, Lieut.-Colonel Stephen J. *Army and Navy Club, S.W.; and Governor of Antigua.*
1861	Hilliard, Major George Towers, Madras Staff Corps. 43, *Upper Seymour-street, Portman-square, W.; and India.*
1858	Hinchliff, T. Woodbine, Esq., Barrister-at-Law. 64, *Lincoln's-inn-fields, W.C.*
1859	Hind, Professor Henry Youle, M.A. *Toronto, Canada West.*
1862	*Hinde, Samuel Henry, Esq. 130, *Piccadilly, W.*
1846	850*Hindmarsh, Frederick, Esq. 17, *Bucklersbury, E.C.*
1861	Hoare, Deane John, Esq. *R. T. Y. Club, Albemarle-street, W.*
1846	Hobbs, J. S., Esq. 157, *Leadenhall-street, E.C.*
1855	Hobbs, Wm. Geo. Ed., Esq. *Master of Grammar School, Wareside, near Ware.*
1830	*Hobhouse, Henry William, Esq. 24, *Cadogan-place, S.W.*
1861	Hodgins, J. George, Esq., Chief Assist. Depart. of Public Instr. *Toronto, Upper Canada.*
1854	*Hodgkin, Thomas, Esq., M.D. 35, *Bedford-square, W.C.*
1856	*Hodgson, Arthur, Esq., Superintendent of the Australian Agricultural Company. *Drayton-hall, West Drayton, near Uxbridge.*
1861	Hodgson, Christopher Pemberton, Esq.
1861	*Hodgson, James Stewart, Esq. 8, *St. Helen's-place, E.C.*
1857	860 Hodgson, Kirkman Daniel, Esq., M.P. 8, *St. Helen's-place, E.C.*

Year of Election.	
1856	Hogg, James, Esq., Jun. 18, *St. Andrew's-square, Edinburgh.*
1830	Hogg, John, Esq., M.A., F.R.S., F.L.S., Foreign Sec. R. Soc. of Literature 8, *Sergeants' Inn, Temple, E.C.; and Norton-house, Stockton-upon-Tees.*
1839	*Holford, Robert S., Esq., M.P. *Dorchester-house, Park-lane, W.*
1830	Holland, Sir Henry, Bart., M.D., F.R.S. 25, *Lower Brook-street, W.*
1861	Holland, Colonel James. 24, *Prince's-square, Kensington-gardens, W.*
1863	Holland, Loton, Esq. 41, *Kensington-park-gardens, Notting-hill, W.*
1862	Holland, Robert, Esq. *Stanmore-hall, Great Stanmore, Middlesex.*
1861	*Hollingsworth, John, Esq., M.R.C.S. *Bexley-place, Greenwich, S.E.*
1861	Holme, J. Wilson, Esq., M.A. *Beckenham, Kent, S.E.*
1835	870*Holmes, James, Esq. 4, *New Ormond-street, Queen-square, W.C.*
1862	Holmes, Sir William H. 4, *Southwick-place, Hyde-park, W.*
1861	Holms, John, Esq. 9, *Petersham-terrace, South Kensington, W.*
1839	*Holroyd, Arthur Todd, Esq., M.D., F.L.S. *Athenæum Club, S.W.*
1857	Holroyd, Henry, Esq., Barrister-at-Law. 2, *Elm-court, Temple, E.C.*
1857	Homfray, Frederick Samuel, Esq., C.E. 6, *Storey's-gate, S.W.*
1857	Homfray, William Henry, Esq. 6, *Storey's-gate, S.W.*
1862	Hood, Henry Schuback, Esq. *War Office, S.W.; and* 10, *Kensington-park-gardens, W.*
1861	Hood, Thomas Hood, Esq. *Stoneridge, Berwickshire.*
1859	*Hood, William Charles, Esq., M.D. *Bethlehem Hospital, S.*
1830	880*Hooker, Sir Wm. J., K.H., PH. D., LL.D., F.R.S., F.S.A., &c. *West-park, Kew, W.*
1861	Hopcraft, George, Esq. 3, *Billiter-square, E.C.*
1846	*Hope, Alex. James Beresford, Esq. *Arklow-house, Connaught-place, Hyde-park, W.; and Bedgebury-park, Hurst-green, Kent.*
1862	Hope, Capt. C. Webley, R.N.
1857	Hoper, Richard, Esq. 53, *Margaret-street, Cavendish-square, W.; and Coufold, Horsham, Sussex.*
1861	Hoskins, Commr. A. H., R.N. *Army and Navy Club, S.W.*
1853	Hoskins, George Alex., Esq. *Athenæum Club, S.W.*
1859	Hoskyns, Chandos Wren, Esq. *Wraxhall-abbey, Warwickshire.*
1853	Houghton, Lord, M.P. 16, *Upper-brook-street, W.; The Hall, Bawtry; and Tryston-hall, Ferrybridge, Yorkshire.*
1856	Hovell, William Hilton, Esq. *Goulburn, New South Wales.*
1864	890 Hovell, W. P., Esq.
1853	Howard, Sir Ralph, Bart. 17, *Belgrave-sq., S.W.; and Bushy-park, Wicklow.*
1857	Howard, Samuel Lloyd, Esq. *Goldings Laughton, Essex.*
1842	*Hubbard, J. Gellibrand, Esq., M.P. 24, *Prince's-gate, Hyde-park South, W.*
1857	Hughes, Capt. Sir Frederic. *Ely-house, Wexford.*
1838	Hughes, William, Esq. 63, *Oakley-square, St. Pancras, N.W.*
1838	*Hume, Edmund Kent, Esq.
1860	*Hume, Hamilton, Esq. *Cooma Vass, New South Wales.*
1861	Hunt, George S. Lennox, Esq., H.B.M. Consul, *Pernambuco.*

Year of Election.	
1857	Hunt, Zacharias Daniel, Esq. *Aylesbury.*
1862	900 Hunter, Henry Lannoy, Esq. *Beech-hill, Reading.*
1860	Huskisson, Wm. H. Tilghman, Esq. *Eartham, near Chichester.*
1858	Hutchinson, Thomas J., Esq., F.R.S.L., F.E.S., F.A.S.L., H.B.M. Consul, *Rosario, Argentine Republic.*
1851	Hyde, James Bartlet, Esq. 43, *Priory-road, Kilburn, N.W.*
1860	*Hyde, Captain Samuel. 8, *Billiter-square, E.C.*
1852	Illingworth, Richard Stonehewer, Esq. 9, *Norfolk-crescent, Hyde-park, W.*
1850	*Imray, James Frederick, Esq. 102, *Minories, E.; and Beckenham, Kent, S.E.*
1861	*Ingall, Samuel, Esq. 1, *Old Broad-street, E.C.; and Forest-hill, Kent, S.E.*
1860	Ingilby, the Rev. Henry John. *Ripley-castle, Ripley, Yorkshire.*
1851	Inglefield, Captain Edward A., R.N., F.R.S. *United Service Club, S.W.*
1846	910 Ingram, Hughes Francis, Esq. *University Club, S.W.*
1863	Innes, Capt. Alex. 97, *Islington, Liverpool.*
1860	*Inskip, G. H., Esq., Master R.N. *H.M. Surveying Vessel 'Seaflower;' and* 23, *Anne-street, Sunderland.*
1852	*Inskip, Rev. Robert Mills. 8, *Boon's-place, Plymouth.*
1840	*Irby, Frederick W., Esq. *Athenæum Club, S.W.*
1853	Irving, Thomas, Esq. 5, *Belitha-villas West, Barnsbury-park, N.*
1862	Irwin, James V. H. 7, *Hereford-square, Old Brompton, S.W.*
1862	Isaac, Frederick N., Esq. *Old Bank, Worcester.*
1855	Jackson, William, Esq., M.P. 10, *Mansfield-street, W.*
1862	Jacomb, Thomas, jun., Esq. 23, *Old Broad-street, Gresham-house, E.C.*
1857	920 James, Colonel Sir Henry, R.E., F.R.S. *Director of the Ordnance Survey, Southampton.*
1861	James, William Bosville, Esq. 13, *Blomfield-road, Maida-hill, W.*
1859	*Janson, T. Corbyn, Esq. *Stamford-hill, N.*
1862	*Jaques, Leonard, Esq. *Easby-abbey, Richmond, Yorks.*
1863	*Jardine, Andrew, Esq. *Lanrick-castle, Stirling.*
1863	*Jardine, Robert, Esq. *Castlemilk, Lockerby, N.B.*
1857	Jefferson, Richard, Esq. *Army and Navy Club, S.W.*
1863	Jeffreys, Edw. W. *Conservative Club, S.W.*
1860	*Jejeebhoy, Sir Jamsetjee, Bart. *Bombay.*
1854	Jellicoe, Charles, Esq. 23, *Chester-terrace, N.W.*
1859	930 Jencken, H. Diedrich, Esq. 1, *Brick-court, Temple, E.C.; and* 2, *York-terrace, Upper Sydenham, S.E.*
1854	Jenkins, Capt. Griffith, I.N., C.B. *East India Club, St. James's-square, S.W.; and Derwen, Welch Pool, Montgomeryshire.*
1837	*Jenkins, R. Castle, Esq. *Beachley, near Chepstow.*
1854	*Jennings, William, Esq., M.A. 13, *Victoria-street, Westminster, S.W.*
1862	Jerdein, John, Esq. 2, *Stafford-street, Bond-street, W.*

Year of Election.	
1858	Jermyn, the Venerable Archdeacon Hugh Willoughby. *Nettlecome-rectory, near Taunton, Somerset.*
1860	Jermyn, Rowland Formby, Esq. *War Office, S.W.*
1860	Jessopp, Rev. Augustus, M.A., Head Master, King Edward VI. School. *Norwich.*
1858	Johnson, Capt. Clement. *Carlton Club, S.W.; and* 1, *Whitehall, S.W.*
1847	Johnson, Edmund Chas., Esq. 20, *Arlington-street, S.W.; and* 6, *Savile-row, W.*
1859	940*Johnson, Henry, Esq. 39, *Crutched-friars, E.C.*
1854	Johnson, John Hugh, Esq.
1861	Johnson, William, Esq., R.N. *R. T. Y. Club,* 7, *Albemarle-street, W.*
1843	Johnston, Alex. Keith, Esq., F.R.S.E., Hon. Mem. Berl. Geog. Soc., etc. *Marchhall-park; and* 4, *St. Andrew-square, Edinburgh.*
1856	Johnston, A. R., Esq., F.R.S. *Athenæum Club, S.W.; and* 25, *Mount-street, W.*
1857	Johnston, J. Brookes, Esq. 29, *Lombard-street, E.C.*
1858	Johnston, Capt. J. Gilbert. 8, *York-terrace, Regent's-park, N.W.*
1853	Johnstone, Sir John V. B., Bart., M.P., D.C.L. 27, *Grosvenor-square, W.; and Hackness-hall, near Scarborough.*
1858	Jones, Capt. Edward Monckton, 20th Regt.
1851	Jones, Lieut.-General Sir Harry D., R.E., K.C.B. *R. M. College, Farnborough Station, Hants.*
1857	950 Jones, Capt. Jenkin, Bombay Engineers. 1, *Lennard-place, Circus-road, St. John's-wood, N.W.; and India.*
1862	Jones, John, Esq. 338, *Strand, W.C.*
1861	Jones, John Pryce, Esq. *Grove-park School, Wrexham.*
1861	Jones, Sir Willoughby, Bart. *Cranmer-hall, Fakenham, Norfolk.*
1863	Joshua, Moss, Esq. *Melbourne; and* 22, *Clifton-gardens, Maida-hill, W.*
1863	Jourdain, Frederick John, Esq. 10, *Austin-friars, E.C.*
1840	*Kalergi, John, Esq. 22, *Park-lane, W.*
1855	Kane, Major Fred. A. C., 15th Regt. Bombay N.I. *Junior U. Service Club, S.W.*
1858	Kay, David, Esq. 17, *St. Paul's-crescent, Camden-town, N.W.*
1858	Keane, Edward Arthur, Lord. 16A, *Hill-street, Berkeley-square, W.; and Stetchworth-park, Newmarket.*
1860	960 Keate, R. W., Esq., Lieutenant-Governor, *Trinidad.*
1857	Keating, Sir Henry Singer, Q.C., M.P., one of the Judges of the Court of Common Pleas. 11, *Prince's-gardens, S.W.*
1857	Keene, Rev. C. E. Ruck. *Swyncombe-park, Henley-upon-Thames.*
1864	Keir, Simon, Esq. *Conservative Club, S.W.*
1845	*Kellett, Rr.-Adm. Henry, C.B. *Clonmel, Ireland.*
1861	Kelly, William, Esq. 6, *Belgrave-street South, Pimlico, S.W.; and* 50, *Rue des Viellards, Boulogne-sur-Mer.*
1860	*Kemball, Col. Arnold Burrowes, C.B., Indian Army. *H.M.'s Consul-General, Bagdad; and* 6, *Chester-place, Hyde-park, W.*
1863	Kempster, J., Esq. 1, *Portsmouth-place, Kennington-lane, Surrey, S.*

Year of Election.		
1860		Kendall, Henry, Esq., Consul for Peru. 11, *New Broad-street, E.C.; and The Limes, Mortlake, S.W.*
1861		Kennard, Adam Steinmetz, Esq. 4, *Lombard-street, E.C.*
1859	970	Kennard, Coleridge J., Esq. 14, *Lombard-street, E.C.*; and 13, *Prince's-terrace, Prince's-gate, S.W.*
1861		Kennard, Robert William, Esq., M.P. 37, *Porchester-terrace, Hyde-park, W.*
1861		Kennedy, Edward Shirley, Esq. *Maidenhead.*
1863		Kennedy, Lord Gilbert. *West-court, Wokingham.*
1854		Kennedy, Rev. John, M.A. 4, *Stepney-green, E.*
1851		Kent, John, Esq. *Shafston, Moreton-bay, Australia.*
1862		Kershaw, Wm., Esq. 16, *St. Mary Axe, E.C.; and Suffolk-lodge, Brixton-road, S.*
1859		Key, Capt. Astley Cooper, R.N., C.B. *United Service Club, S.W.*
1862		Key, J. Binney, Esq. 25, *Hanover-square, W.*
1857		Keysell, Francis P., Esq. *Sycamore-villa*, 35, *Carlton-hill, St. John's-wood, N.W.*
1846	980	King, Lieut.-Colonel Edward R., 36th Regt. *Junior United Service Club, S.W.*
1858		King, Rev. Samuel W., A.M. *Saxlingham-rectory, Norwich.*
1861		King, Major W. Ross, Unatt., F.S.A. Scot. *Turtowie, Blackburn, Aberdeenshire; Army and Navy Club, S.W.*
1857		Kinkel, Gottfried, Esq., PH. DR. 23, *Blomfield-road, Maida-hill, W.*
1857		*Kinnaird, Hon. Arthur F., M.P. 2, *Pall-mall East, S.W.*
1860		Kinns, Samuel, Esq., Phil. Dr., F.R.A.S. *Highbury-new-park College, N.*
1858		Kirk, John, Esq., M.D. *Livingstone Expedition.*
1863		Kirke, John, Esq., Barrister. *Naples.*
1861		Kirkland, Sir John. 17, *Whitehall-pl., S.W.; and Foot's-cray-pl., Kent, S.E.*
1835		*Kjaer, Thomas Andreas, Esq. *Hjornet af Kongins Nyctorv og Gothersgaden* No. 26, 3*d Sahl, Copenhagen.*
1862	990	Knollys, Lieut.-General W. T., V.-Pres. Council of Military Education. *Eaton-square, S.W.*
1861		Knox, Thomas G., Esq. *India.*
1861		Kyd, Hayes, Esq., M.R.C.S. *Wadebridge, Cornwall.*
1859		Labrow, Valentine H., Esq. *Mitre-court, Temple, E.C.*
1860		Labuan, Right Rev. F. T. MacDougall, Bishop of.
1849		*Laffan, Capt. Robert Michael, R.E. *Army and Navy Club, S.W.; and Otham-lodge, Kent.*
1859		Lamb, Lieut. Henry, I.N. 108, *Leadenhall-street, E.C.*
1863		*Lambert, Alan, Esq. 2, *Portugal-street, South Audley-street, W.*
1864		Lambert, Charles, Esq. 2, *Queen-st.-place, Upper Thames-street, E.C.*
1864		Lamert, Capt. G. F. 20, *Albemarle-street, W.*
1861	1000	Lamont, James, Esq. *Brooks's Club, S.W.*
1864		Lampson, C. M., Esq. 64, *Queen-street, Cheapside, E.C.*
1838		*Lance, John Henry, Esq., F.L.S. *The Holmwood, Dorking.*
1861		Lane, Edward, Esq. *Peninsular and Oriental S. N. Company*, 122, *Leadenhall-street, E.C.*

Year of Election.	
1861	*Lang, Andrew, Esq. *Dunmore, Hunter-river, N. S. Wales; and Dunmore Teignmouth, Devon.*
1859	*Lange, Daniel A., Esq. *Egypt.*
1856	Langler, J. R., Esq., Lecturer, Wesleyan Normal Institution. *Westminster, S. W*
1857	Lansdowne, Marquis of. *Lansdowne-house, Berkeley-square, W.*
1833	*Larcom, Maj.-General Sir Thomas Aiskew, R.E., K.C.B., F.R.S. *Castle, Dublin*
1861	Lardner, Col. John. *United Service Club, S. W.*
1859	1010Larnach, Donald, Esq. 21, *Kensington-palace-gardens, W.*
1854	Latrobe, Ch. J., Esq. *Athenæum Club, S. W.; and Whitbourne-court, Worcester.*
1862	*Laurie, John M., Esq. 4, *St. George's-place, S. W.; and Maxwelton-house, Thornhill, Dumfriesshire.*
1846	*Law, the Hon. H. Spencer, M.A. 1, *Lowndes-st., S. W.; and Ellington-h., Ramsgate.*
1830	Law, William J., Esq. 63, *Upper Seymour-street, W.; 33, Lincoln's-inn-fields, W.C.; and 5, Sussex-square, Brighton.*
1861	Lawrence, Edward, Esq. 16, *Wellesley-terrace, Princess-park, Liverpool.*
1862	*Lay, Horatio, N., Esq., Commissioner of Foreign Customs in China.
1857	Layard, Austen H., Esq., M.P., D.C.L. 130, *Piccadilly, W.*
1860	Leader, Nicholas P., Esq., M.P. *Conservative Club, S. W.; and Dromagh, Cork.*
1863	*Leaf, Chas. J., Esq. *Old-change, E.C.; and The Rylands, Norwood, S.*
1861	1020*Learmouth, Dr. John. *Ryde, Isle of Wight.*
1853	*Le Breton, Francis, Esq. 21, *Sussex-place, Regent's-park, N. W.*
1861	Leckie, Patrick C., Esq. 7, *Palace-road, Roupell-park, Streatham, S.*
1830	*Lee, John, Esq., LL.D., D.C.L., Pres. of the R. Astr. Soc., F.R.S., F.S.A., F.R.S.N.A., &c. 5, *College, Doctors'-commons E.C.; and Hartwell-house, near Aylesbury, Bucks.*
1839	Lee, Thomas, Esq. *Great Barr, Staffordshire.*
1861	Lefevre, George Shaw, Esq. 8, *Spring-gardens, S. W.*
1833	*Lefevre, Sir John George Shaw, M.A., D.C.L., F.R.S., Vice-Chancellor of the University of London. 8, *Spring-gardens, S. W.*
1853	Lefroy, Colonel John Henry, R.A., F.R.S. *Royal Arsenal, Woolwich, S.E.*
1862	Leggatt, Clement Davidson, Esq. 2, *Upper Gower-street, Bedford-sq., W.C.*
1861	Legh, Wm. John, Esq., M.P. 37, *Lowndes-square, S. W.; and Lyme-park, Cheshi c.*
1861	1030*Lehmann, Frederick, Esq. 139, *Westbourne-terrace, W.*
1863	*Leigh, Cholomeley A., Esq. 9a, *Davies-street, Berkeley-square, W.*
1845	Leigh, John Studdy, Esq. 54, *Leinster-square, Kensington-gardens, W.*
1863	Le Mesurier, Henry P., C.E. *St. Martin's, Guernsey.*
1863	Le Messurier, M.-Gen., A.P. 2, *Stanhope-terrace, Hyde-park, W.*
1836	Lemon, Sir Charles, Bart., F.R.S., &c. *Carclew, near Falmouth, Cornwall.*
1857	*Lenox, George Wm., Esq. 34, *Portland-place, W.; and Pont-y-Pridd, Glamorganshire.*
1856	Leslie, the Hon. G. W. *House of Commons, S. W.; and 4, Harley-street, W.*
1859	Leslie, Walter D., Esq. *Arthur's Club, St. James's-street, S. W.*
1862	Leslie, Wm., Esq., M.P. *Warthill, Aberdeenshire; and Carlton Club, S. W.*

Year of Election.	
1840	1040*Letts, Thomas, Esq. 8, *Royal Exchange, E.C.*
1863	Leveaux, E. H., Esq. 25, *The Cedars, Putney, S.W.*
1857	Leverson, George B. C., Esq. 73, *Gloucester-terrace, Hyde-park, W.*
1862	Levick, Joseph, Esq. 21, *Cleveland-gardens, W.*
1859	Levinsohn, Louis, Esq. 7, *Finsbury-square, E.C.*
1859	Lewis, Rev. Evan, B.A. *Rothwell, Northamptonshire.*
1852	Leycester, Commander Edmund M., R.N., Superintendent of Packets and Transports. *Admiralty-office, Liverpool.*
1861	Leyland, Luke Swallow, Esq. *The Leylands, Hatfield, Doncaster.*
1859	Lichfield, Thomas George, Earl of. *Shugborough, Staffordshire.*
1856	Lilford, Thomas Lyttleton Powys, Lord. 10, *Grosvenor-place, W.*
1860	1050Lindsay, H. Hamilton, Esq. 22, *Berkeley-square, W.*
1857	Lindsay, Maj.-Gen. the Hon. J., Gren. Guards, M.P. 20, *Portman-square, W.*
1861	Lindsay, W. Lauder, Esq., M.D., F.R.S. Edin. *Pitcullen-house, Perth, N.B.*
1855	*Lindsay, Wm. S., Esq., M.P. *Manor-house, Shepperton, Middlesex.*
1861	Lloyd, Alexander Ogilvie, Esq., M.A. *Hazelcroft, Ripley, Yorkshire.*
1857	*Lloyd, George A., Esq. 2, *Royal Exchange-buildings, E.C.*
1861	Lluellyn, Capt. Richard. 20, *Montagu-square, W.C.*
1863	Loch, George, Esq. 12, *Albemarle-street, W.*
1859	Loch, Henry Brougham, Esq. *Government-house, Isle of Man.*
1861	Loch, John Charles, Esq. 12, *Albemarle-street, W.; and Hong-Kong.*
1857	1060Loch, William Adam, Esq. 8, *Great George-street, Westminster, S.W.*
1858	Lockhart, William, Esq., F.R.C.S. *Park-villas, Granville-park, Blackheath, S.E.; and China.*
1860	Lockwood, James Alfred. *United Arts Club, Hanover-square, W.*
1856	*Logan, Sir William Edmond, F.R.S. *Montreal, Canada.*
1855	Login, Sir John Spencer.
1860	Londesborough, Wm. Henry Forester, Lord. *Thomas's Hotel*, 25, *Berkeley-sq., W.*
1830	Long, George, Esq., M.A. 22, *Buckingham-street, Brighton.*
1839	*Long, Henry L., Esq. *Travellers' Club, S.W.; and Hampton-lodge, Farnham, Surrey.*
1857	*Long, W. Beeston, Esq.
1858	Longden, Morrell D., Esq. 4, *Ennismore-place, Hyde-park, S.W.*
1847	1070Longman, Thos., Esq. *Paternoster-row, E.C.; and* 8, *Sussex-sq., Hyde-park, W.*
1858	Longman, William, Esq. 36, *Hyde-park-square, W.*
1861	Lonsdale, Arthur Pemberton, Esq.
1860	Looker, William Robert, Esq. 8, *Park-villas-west, Richmond, S.W.*
1861	Lorimer, George B, Esq. *Westminster Club, Albemarle-street, W.*
1863	Lovell, Capt. 6, *Granville-park-villas, Blackheath, S.E.*
1856	Lovett, Phillips Cosby, Esq. *Liscombe-ho., Liscombe, Leighton Buzzard, Bucks.*
1861	Low, Robert, Esq. 17, *Woburn-square, W.C.*
1863	Low, S. P., Esq. 55, *Parliament-street, S.W.*
1858	Lowden, Rev. George Rouse. 12, *Leinster-gdns., Hyde-park, W.; and Uxbridge.*

Year of Election	
1859	1080Lowe, Capt. W. Drury. *Myria, Bettws-y-Coed, Llanrwst, North Wales.*
1863	Lowndes, E. C., Esq. 84, *Eaton-place, S.W.*
1830	Lowry, Joseph Wilson, Esq. 45, *Robert-street, Hampstead-road, N.W.*
1860	Luke, William, Esq., Bengal Civil Service. 93, *Inverness-terr., Hyde-park, W.*
1862	Lumsden, James Grant, Esq. *Grey-lodge, Torquay.*
1860	Lumsden, Rev. Robert Comyn. *Broomhall-park, Sheffield.*
1860	Lush, Robert, Esq., Q.C. *Balmoral-house, Avenue-road, Regent's-park, N.W.*
1830	*Lyell, Sir Charles, M.A., LL.D., F.R.S. 53, *Harley-street, Cavendish-square, W.*
1837	*Lynch, Capt. H. Blosse, I.N., C.B., F.R.A.S. *Athenæum Club, S.W.*
1861	*Lynch, Thomas Kerr, Esq. 31, *Cleveland-square, Hyde-park, W.*
1858	1090Lyne, Francis, Esq.
1862	Lyon, David, Esq. 31, *South-street, Park-lane, W.*
1863	McArthur, Alex., Esq. *Gwydyr-house, Brixton-rise, S.*
1862	*Macarthur, Major-Gen. Edward, C.B. 133, *Piccadilly, W.*
1863	Macbraire, James, Esq. *Broadmeadows, Berwick-on-Tweed.*
1860	McClintock, Capt. Sir Francis Leopold, R.N. *United Service Club, S.W.*
1862	McCosh, John, Esq., M.D. *Junior U.S. Club, S.W.*
1862	Macdonald, Chessborough C., Esq. 32, *Belsize-park, Hampstead, N.W.*
1863	Macdonald, Duncan George Forbes, Esq., C.E. 13, *Royal Exchange, E.C.*
1830	MacDonnell, John, Esq. 48, *Grove-end-road, St. John's-wood, N.W.*
1843	1100Macdonnell, Sir Richard Graves, C.B., late Governor of S. Australia. 36, *Winchester-street, S.W.*
1858	MacDougall, Alex. H., Esq. 44, *Parliament-street, Westminster, S.W.*
1862	M'Dougall, Geo. Fred., Esq., R.N. *Admiralty Survey, Oban, N.B.*
1863	Macfarlan, George, Esq. *Christ-church, Canterbury, New Zealand.*
1861	MacGeorge, Colonel, Bengal Army. 18, *Cleveland-square, W.*
1859	McGrath, John C., Esq. *Reform Club, S.W.*
1856	Macgregor, Alexander, Esq. *Sec. to the West India Committee Rooms,* 37, *Walbrook, E.C.*
1855	McGregor, Duncan, Esq. *Board of Trade, S.W.; and Athenæum Club, S.W.*
1839	Macintosh, Lieut.-General Alex. Fisher, K.H. 7, *Tilney-street, Park-lane, W.*
1845	*Macintyre, Patrick, Esq., F.S.A., Off. Assoc. Inst. Act. 9, *Chapel-street, Stratford-on-Avon.*
1859	1110Mackay, Rev. Alexander, A.M. *Rhynie, Aberdeenshire.*
1860	Mackay, Thomas Miller, Esq. 24, *Leinster-gardens, Bayswater, W.*
1859	*Mackean, Thos. W. L., Esq. 24, *Oxford-square, Hyde-park, W.*
1862	Mackenzie, Colin J., Esq. *Windham Club, S.W.*
1845	Mackenzie, Right Hon. Holt, F.R.A.S. *Athenæum Club, S.W.; and* 28, *Wimpole-street, W.*
1861	Mackenzie, Sir James J. Randall, Bart., *of Seaforth, Rosehaugh, Munlochy, N.B.*
1860	*Mackenzie, James T., Esq. 69, *Lombard-street, E.C.*
1863	Mackenzie, John H., Esq. *Wallington, Carshalton, Surrey.*

Year of Election	
1858	McKerrell, Robert, Esq. 45, *Inverness-terrace, W.; and Mauritius.*
1864	*Mackeson, Edward, Esq. 59, *Lincoln's-inn-fields, W.C.*
1830	1120Mackillop, James, Esq., F.R.A.S. 30, *Grosvenor-square, W.*
1831	Mackinnon, Lachlan, Esq. *Reform Club, S.W.; and Bittacy-house, Mill-hill, N.W.*
1855	Mackinnon, Wm. Alex., Esq., M.P., F.R.S. 4, *Hyde-park-place, W.*
1861	Mackintosh, Alexander Brodie, Esq. *Oriental Club, W.; and Dunoon, Scotland.*
1860	Mackirdy, Lt.-Col. Elliot, 69th Rgt. *U. S. Club, S.W.; and Tonghoo, Birmah.*
1850	Maclean, William Crichton, Esq. 5, *Camperdown-terrace, Great Yarmouth.*
1859	Maclear, Sir Thomas. *Astronomer Royal, Cape of Good Hope.*
1859	MacLeay, George, Esq. *Athenæum Club, S.W.; and Sydney.*
1864	M'Laren, J., Esq. 31, *Abbey-road, St. John's-wood, N.W.*
1852	M'Leod, J. Lyons, Esq., late Consul for Mozambique.
1852	1130M'Leod, Walter, Esq. *Head Master of the Royal Military Asylum, Chelsea, S.W.*
1855	Maclure, Andrew, Esq. *Maclure, Macdonald, and Macgregor*, 37, *Walbrook, E.C.*
1861	Maclure, John William, Esq. 2, *Bond-street, Manchester.*
1855	*M'Clure, Captain Sir Robert J. Le M., R.N. *H.M.S. 'Esk.'*
1860	Macmillan, Alex., Esq. 23, *Henrietta-st., Covent-garden, W.C.*
1855	Macnab, John, Esq. *Stead's-place, Leith-walk, Edinburgh.*
1839	M'Neil, The Right Hon. Sir John, G.C.B. *Granton, near Edinburgh.*
1863	McConnell, James E., Esq., C.E. *Dean's-yard, Westminster, S.W.; and The Woodlands, Great Missenden, Bucks.*
1861	*McConnell, W. R., Esq., Barrister-at-Law. 12, *King's-bench-walk, E.C.; and Charleville, Belfast.*
1856	*Macpherson, Duncan, Esq., M.D., Inspector-General of Hospitals.
1861	1140Macpherson, William, Esq. 6, *Stanhope-street, Hyde-park-gardens, W.*
1845	Macqueen, James, Esq. 4, *Alma-terrace, Hammersmith, W.*
1861	*Maguire, Capt. Rochfort, R.N. *United Service Club, S.W.*
1853	Majendie, Ashhurst, Esq., F.R.S. *Athenæum Club, S.W.;* 152, *Albany-street, Regent's-park, N.W.; and Hedingham-castle, Essex.*
1845	*Major, Richard Henry, Esq. *British Museum, W.C.*
1858	Malby, John Walter, Esq. 15, *Richmond-villas, Seven-sisters'-rd., Holloway, N.*
1853	*Malby, Thomas, Esq. 2, *Park-villas, Seven-sisters'-road, Holloway, N.*
1862	*Malcolm, Capt. Edward Donald, R.E. *Chatham.*
1863	Malcolm, Jas., Esq. 22, *Prince's-gate, Knightsbridge, W.*
1843	*Malcolm, W. E., Esq. *Burnfoot, Langholme, near Carlisle.*
1853	1150*Mallet, Charles, Esq. *Audit Office, W.C.; and Belmont, Hampstead, N.W.*
1836	*Manchester, James Prince Lee, Bishop of, F.R.S., &c. *Athenæum Club, S.W.; and Sedgley-hall, Manchester.*
1830	*Mangles, Capt. James, R.N., F.R.S. *Fairfield, near Exeter.*
1860	Mann, James Alexander, Esq., M.R.A.S. *Kensington-palace, W.*
1856	Manning, Frederick, Esq. *Byron-lodge, Leamington; and* 8, *Dover-street, W.*
1859	Mantell, Wm. Walter, Esq.
1859	Marett, Charles, Esq., M.A., Barrister-at-Law. 56, *Chancery-lane, W.C.*

Year of Election	
1860	Mariette, Prof. Alphonse, M.A. 33, *Blandford-square, W.*
1830	*Marjoribanks, Edward, Esq. 34, *Wimpole-street, W.*
1854	Markham, Clements R., Esq. *India Office, S.W.; and* 21, *Eccleston-sq., S.W.*
1836	1160*Markham, Edward, Esq. 45, *Welbeck-street, Cavendish-square, W.*
1857	Marlborough, George, Duke of. *Blenheim, Woodstock.*
1864	Marsden, Rev. J. H. *Great Oakley, near Harwich, Essex.*
1857	*Marsden, Robert C., Esq. 14, *Hanover-terrace, Regent's-park, N.W.*
1857	Marsh, Matthew Henry, Esq., M.P. *Oxford and Cambridge Club, S.W.; and* 41, *Rutland-gate, S.W.*
1862	Marshall, Capt. J. G. Don. 3, *Montpellier-place, Gloucester.*
1854	Marshall, Jas. Garth, Esq. *Headingley, nr. Leeds; and Monk Coniston, Ambleside.*
1862	Marshall, William, Esq. *Oxford and Cambridge Club, S.W.*
1859	*Marsham, the Hon. Robert. *The Mote, Maidstone, Kent.*
1857	Marshman, J. C., Esq. 7, *Kensington-palace-gardens, W.*
1857	1170Martin, Francis P. B., Esq.
1861	Martin, Henry, Esq. *Adelaide, Victoria, Australia.*
1860	*Martin, Richard Biddulph, Esq. 21, *Eaton-square, S.W.*
1862	Martin, Thomas, Esq. 22, *Stock Orchard-villas, Caledonian-rd., Holloway, N.*
1830	*Martineau, Joseph, Esq., F.Z.S., F.H.S. *Athenæum Club, S.W.; Basing-park, Alton, Hants; and Whitbread's-brewery, E.C.*
1845	*Matheson, Sir James, Bart., M.P., F.R.S. 13, *Cleveland-row, S.W.; and Achany, Bonar-bridge, Sutherlandshire, &c.*
1858	Mathieson, James Ewing, Esq. 77, *Lombard-street, E.C.; and* 16, *Queen's-gardens, Bayswater, W.*
1863	Matthie, M.-Gen. James. *Gothic-house, Upper Hamilton-terrace, St. John's-wood, N.W.*
1837	*Maughan, Captain P., Indian Navy, F.R.A.S. 37, *Melvill-street, Edinburgh.*
1855	May, Daniel John, Esq., R.N. *Cape of Good Hope.*
1858	1180Mayer, Joseph, Esq., F.S.A. 68, *Lord-street, Liverpool.*
1861	Mayers, William S. F., Esq., Interpreter to H.M. Consulate; *Shanghai.*
1862	Mayne, Commr. Richard Charles, R.N. *H.M.S. 'Eclipse;' and* 80, *Chester-square, S.W.*
1858	Mayo, Capt. John Pole. *Army and Navy Club, S.W.*
1863	Meade, the Hon. Robert Henry. *Foreign Office, S.W.; and* 3, *Belgrave-square, S.W.*
1862	*Medlycott, Lieut. Mervyn B., R.N. *H.M.S. 'Britannia.'*
1860	*Meinertzhagen, Daniel, Esq. 10, *Moorgate-street, E.C.; and* 28, *Devonshire-place, Portland-place, W.*
1854	Melvill, Col. Sir Peter Melvill, Mil. Sec. to the Bombay Gov. 27, *Palmeira-square, Brighton.*
1838	Melvill, Philip, Esq., F.R.A.S. *Ethy House, Lostwithiel, Cornwall.*
1863	Mercier, Rev. J. P. *St. Mark's College, Chelsea, S.W.*
1842	1190*Merivale, Herman, Esq., Under Sec. of State for India. *India Office, Victoria-street, Westminster, S.W.; and* 26, *Westbourne-terrace, W.*
1863	Meurant, Capt. E., 83rd Regt. *Junior U. S. Club, S.W.*

Year of Election.	
1860	Michell, Thomas, Esq. *St. Petersburg.*
1863	*Michie, A., Esq. 22, *Berkeley-square, W.*
1848	Middleton, Capt. Sir G. N. Broke, Bart., R.N. *H.M.S. 'Hero,' Sheerness; and Broke-hall, Suffolk.*
1859	Miland, John, Esq. 4, *Mount-street, Berkeley-square, W.*
1861	Miles, Pliny, Esq. 43, *Great Tower-street, E.C.*
1860	Miles, Rev. R. *Bingham, Notts.*
1861	Miller, George T. 59, *Portland-place, W.*
1861	*Miller, Lieut. Henry Matthew, R.N. *The Grove, Exeter; and Junior United Service Club, S.W.*
1853	1200*Miller, Captain Thomas, R.N. *H.M.S. 'Clio;' and United Service Club, S.W.*
1861	Milligan, Joseph, Esq. *Athenæum Club, S.W.; and* 15, *Northumberland-st. W.C.*
1857	Mills, Arthur, Esq., M.P. 34, *Hyde-park-gardens, W.*
1863	*Mills, John R., Esq., M.P. *Kingswood-lodge, Englefield-green.*
1860	Milman, Capt. Everard, Madras Horse Artillery. 9, *Berkeley-square, W.*
1860	Mitchell, Capt. Alexander. 6, *Great Stanhope-street, Park-lane, W.*
1862	*Mitchell, George, Esq. 22, *Bolton-street, Piccadilly, W.*
1859	Mitchell, William, Esq. 54, *Gracechurch-street, E.C.; and* 6, *Hyde-park-gate, Kensington-gore, W.*
1851	*Mocatta, Frederick D., Esq. 35, *Gloucester-place, Portman-square. W.*
1853	Moffatt, George, Esq., M.P. 103, *Eaton-square, S.W.*
1861	1210Mollison, Alexander Fullerton, Esq. 10, *Lansdowne-terrace, Notting-hill, W.*
1861	Money, Lieut.-Col. George Henry. 9, *Berkeley-street, W.*
1862	*Montague, Capt. Horace. 24, *Chapel-street, Park-lane, W.*
1842	*Montagu, Major Willoughby. *Clapham-common, S.*
1842	*Monteagle, Thomas, Lord, F.R.S. 7, *Park-street, Westminster, S.W.; and Mount Trenchard, Limerick.*
1830	*Montefiore, Sir Moses, Bart., F.R.S., F.R.S.N.A. 7, *Grosvenor-gate, Park-lane W.; and East-cliff-lodge, Ramsgate.*
1830	*Monteith, Lieut.-General William, E.I.C. Eng., F.R.S. 11, *Upper Wimpole-street, W.; and Oriental Club, W.*
1859	Montgomerie, F. Butler, Esq. 2, *Cleveland-row, St. James's, S.W.; and St. Leonard's-on-Sea.*
1859	Montgomerie, Capt. T. G., Beng. Engrs., 1st Assist. Trig. Survey. *Dehra Dún.*
1860	Montgomery, Robert Martin, Esq. 6, *Ashley-place, Victoria-street, S.W.*
1839	1220Moody, Lieut.-Colonel R. C., R.E. *British Columbia; and Junior United Service Club, S.W.*
1861	Moon, Rev. Edward Graham. *Fetcham, Surrey.*
1859	Moon, William, Esq. 104, *Queen's-road, Brighton.*
1857	*Moor, Rev. Allen P., M.A., F.R.A.S. *Sub-Warden St. Augustine College, Canterbury.*
1857	Moore, Captain John, R.N., C.B. 102, *Piccadilly, W.*
1861	Moore, John Carrick, Esq. *Corswall, Wigtonshire; Geological Society, W.C.; and* 23, *Bolton-street, W.*
1857	Moore, Major-General W. Y. *United Service Club, S.W.*

Year of Election.	
1861	Morgan, Junius Spencer, Esq. 13, *Prince's-gate, Hyde-park, W.*
1861	Morgan, William, Esq., R.N. *H.M.S. 'Pembroke,' Harwich.*
1839	*Morris, Charles, Esq. *University Club, S.W.*
1861	1230Morrison, Captain Peter.
1861	Mouat, Frederick J., Esq., M.D., Surgeon-Major and Inspector-General of Prisons, Bengal Army, &c. *Athenæum Club, S.W.; and India.*
1858	Mudie, Charles Edward, Esq. *The Green, Hampstead, N.W.*
1858	Mueller, Ferdinand, Esq., M.D., PH. DR. *Director of the Botanical Gardens, Melbourne.*
1862	Muir, Francis, Esq., LL.D., Surveyor H.M.'s Revenue of Stamps and Taxes. 13, *Queen-street, Glasgow.*
1855	Muir, Thomas, Esq. 24, *York-terrace, Regent's-park, N.W.*
1859	Murchison, Kenneth R., Esq. *Manor-house, Bathford, Bath.*
1830	*Murchison, Sir Roderick Impey, K.C.B., G.C.ST.S., M.A., D.C.L., V.P.R.S., G.S., and L.S., Director-General of the Geological Survey of Great Britain and Ireland, Trust. Brit. Mus., Hon. Mem. R.S. of Ed., R.I.A., Mem. Acad. St. Petersburg, Berlin, Stockholm, Brussels, and Copenhagen, Corr. Ins. Fr., *etc. etc.* 16, *Belgrave-square, S.W.; and* 28, *Jermyn-street, S.W.*
1830	*Murdock, Thomas W. C., Esq. 8, *Park-street, Westminster, S.W.; and River-bank, Putney, S.W.*
1860	Murray, George J., Esq. *Upurne-house, Dorchester; and St. James' Club, Bennett-street, W.*
1851	1240*Murray, Rear-Adm. the Hon. Henry Anthony. 4D, *Albany-chambers, W.*
1844	*Murray, James, Esq. *Foreign Office, S.W.*
1830	Murray, John, Esq. 50, *Albemarle-street, W.; and Newstead, Wimbledon, S.W.*
1860	*Murray, Lt.W., 68th Beng. N. Inf., Topo. Assist. G. Trig. Survey. *Mussoorie, India.*
1853	Napier, Col. Geo. Thomas Conolly, C.B., Assist. Adj.-Gen. *Junior U.S. Club, S.W.*
1861	Napier, William, Esq.
1857	Napier, Hon. William. 54, *Green-street, Grosvenor-square, W.*
1859	*Nasmyth, Capt. David J., 1st Assist. Trigonometrical Survey. *East India U.S. Club, S.W.; 5, Charlotte-square, Edinburgh; and Bhooj, Bombay.*
1863	Neadham, Rt. Hon. Thos. E., M.P. *Ashley-place, Victoria-street, S.W.*
1861	Neave, Sir Richard Digby, Bart. *Travellers' Club, S.W.;* 78, *Eccleston-square, S.W.; and Dagnam-park, Romford, Essex.*
1857	1250*Nesbitt, Henry, Esq. 19, *Pembury-road, Lower Clapton, N.E.*
1859	*Newcastle, Henry Pelham-Clinton, Duke of. *Colonial Office, S.W.; Clumber-park, Worksop-manor; and Nottingham-castle, Notts.*
1850	Newman, Thomas Holdsworth, Esq. 14, *Arlington-street, S, W.*
1856	Nicholson, Sir Charles, Bart., D.C.L., Chancellor of the University, Sydney. 19, *Portland-place, W.*
1861	Nicholson, Lt.-Col. Lothians, R.E. 26, *Suffolk-street, Pall-mall, S.W.; and* 11, *James-street, Buckingham-gate, S.W.*

Year of Election.	
1844	Nicolay, Rev. Chas. Grenfell. *Bahia.*
1836	Nicolson, Rear-Adm. Sir Frederick Wm. Erskine, Bt., R.N. 15, *William-street, Lowndes-square.*
1858	Nix, John H., Esq. 77, *Lombard-street, E.C.*
1860	Nixon, Brinsley de Courcy, Esq. *Athenæum Club, S.W.*
1861	Noel, the Hon. Roden. 11, *Chandos-street, Cavendish-square, W.; and Exton-hall, Oakham, Rutlandshire.*
1857	1260*Nolloth, Captain Matthew S., R.N. *Hong-Kong; United Service Club, S.W.; and Peckham, Surrey, S.E.*
1860	Norris, Harry, Esq. *Colonial Office, S.W.; and 4, Little St. James-street, S.W.*
1861	North, Alfred, Esq. *Salcombe-hill-house, Sidmouth.*
1856	North, Frederic, Esq., M.P. 3, *Victoria-street, Westminster, S.W.; and Hastings-lodge, Hastings.*
1830	*Northumberland, Algernon, Duke of, Vice-Admiral, K.G., F.R.S., F.S.A., F.R.S.N.A., Pres. R.I. *Northumberland-house, Charing-cross, S.W.; Alnwick and Keilden Castles, Northumberland; Werrington-park, Cornwall; Sion-house, Middlesex, W.; and Stanwick-park, Yorkshire.*
1862	Notman, Henry Wilkes, Esq. 7, *Great Marlborough-street, W.*
1862	Notman, Robert Russell, Esq. 7, *Great Marlborough-street, W.*
1862	Nourse, Henry, Esq. *Conservative Club, S.W.*
1858	*Oakeley, R. Banner, Esq. *Oswaldkirk-hall, Yorkshire.*
1859	Oakley, Rev. Charles E., M.A.
1863	1270O'Callaghan, Chas., Esq., Staff Surgeon. *Killarney, Ireland.*
1856	O'Connor, Col. Luke Smyth, C.B., late Governor of the Gambia. *U.S. Club, S.W.*
1858	Ogilvie, Edward D., Esq. *Fulgillar, Clarence river, New South Wales.*
1863	Ogilvy, Col. Thos. 23, *Grafton-st., Piccadilly, W; and Ruthven, Forfarsh., N.B.*
1859	Ogle, John W., Esq., M.D. 13, *Upper Brook-street, W.*
1861	Oldershaw, Capt. Robert Piggott. 74, *Warwick-square, Belgrave-road, S.W.*
1863	Olding, J. A., Esq. 10, *Lee-road, Blackheath, S.E.*
1861	Oliphant-Ferguson, G. H., Esq. *Broadfield-house, Carlisle.*
1855	Oliphant, Laurence, Esq. *Athenæum Club, S.W.; and 4, Mount-street, W.*
1853	Oliveira, Benjamin, Esq., F.R.S. 8, *Upper Hyde-park-street, W.*
1845	1280*Ommanney, Capt. Erasmus, R.N., F.R.A.S. 14, *Great George-street, S.W.; United Service Club, S.W.; and Gibraltar.*
1838	*Ommanney, H. M., Esq. *Blackheath, S.E.*
1853	Osborn, Sir George R., Bart. *Travellers' Club, S.W.; and Chicksand-priory, Beds.*
1856	Osborn, Capt. Sherard, R.N., C.B., Officier de Légion d'Honneur, etc. *Junior United Service Club, S.W.; and 8, Southwick-street, Oxford-square, W.*
1861	Osborn, Capt. Willoughby. *Political Agent, Bhopal, Schira, India.*
1852	Oswell, William Cotton, Esq.
1860	Otter, Charles, Esq. 47, *Montague-square, W.*

Year of Election.	
1855	Otway, Arthur John, Esq. *Army and Navy Club, S.W.*
1860	*Ouvry-North, the Rev. J. *East Acton, Middlesex, W.*
1844	*Overstone, Samuel, Lord, M.A., M.R.I. 2, *Carlton-gardens, S.W.; and Wickham-park, Surrey.*
1846	1290*Oxford, Rt. Rev. Samuel Wilberforce, Bishop of, F.R.S., F.S.A. 26, *Pall-mall, S.W.; Cuddesden-palace, Wheatley, Oxfordshire; and Lavington, Sussex.*
1861	Page, Thomas, Esq., C.E., F.G.S. 2, *Middle Scotland-yard, S.W.; and Tower Cressy, Aubrey-road, Bayswater, W.*
1853	Pakington, Right Hon. Sir John Somerset, Bart., M.P. 41, *Eaton-square, S.W.; and Westwood-park, Droitwich, Worcestershire.*
1856	Palliser, Captain John. *Comrah, Kilmackthomas, Waterford; and National Club, Whitehall-gardens, S.W.*
1855	Palmer, Major Edm., R.A. 7, *Home-park, Stoke, Devonport.*
1862	Palmer, Rev. Jordan, M.A., F.S.A., Chaplain to St. Ann's Royal Society. *Streatham, S.*
1838	*Palmer, Samuel, Esq.
1851	Palmerston, Henry John, Lord Viscount, M.P., K.G., G.C.B., F.R.S., &c. *Cambridge-house, Piccadilly, W.; and Broadlands, Romsey, Hants.*
1863	*Paris, H.R.H. Le Comte de. *Claremont.*
1849	*Parish, Commr. John E., R.N. *H.M.S. 'Ardent;' and Army and Navy Club, S.W.*
1833	1300*Parish, Sir Woodbine, K.C.H., F.R.S., &c. *Quarry-house, St. Leonard's-on-Sea.*
1862	Park, Lt.-Colonel A., H.M. Indian Army. 41, *Porchester-square, W.*
1862	Parker, Henry T., Esq. 3, *Ladbroke-gardens, Kensington-park, W.*
1862	Parker, Robert Deane, Esq. *Union Club, S.W.; and Barham, Canterbury.*
1850	Parkes, Sir Harry S., C.B., &c. *Oriental Club, W.; Athenæum Club, S.W.; and Priory-road, Kilburn, N.W.*
1850	*Parkyns, Mansfield, Esq., F.Z.S. *Arthur's Club, St. James's-street, S.W.; and Woodborough-hall, Southwell.*
1859	Pasteur, Marc Henry, Esq. 58, *Mincing-lane, E.C.*
1857	Paton, Andrew A., Esq. *H.B.M.'s V.-Consul, Missolonghi, Greece.*
1863	Pattinson, J., Esq. 21, *Bread-street, E.C.*
1858	Paul, Joseph, Esq. *Ormonde-house, Ryde, I. of Wight.*
1862	1310Pauli, Charles P., Esq. *Kirby-hall, Horton, Kirby.*
1847	*Paynter, William, Esq., F.R.A.S. 21, *Belgrave-square, S.W.; and Camborne-house, Richmond, Surrey, S.W.*
1855	Peabody, George, Esq. 22, *Old Broad-street, E.C.*
1853	Peacock, George, Esq. *Starcross, near Exeter.*
1860	Pearce, Ebenezer John, Esq., PH. DR., Principal of *Great Ealing School, Ealing, Middlesex, W.*
1863	Pearde, Capt., R.N. *Arthur's Club.*
1863	Pearson, Fred., Esq. 13, *Cleveland-square, W.*
1853	*Peckover, Alexander, Esq. *Wisbeach.*

Year of Election.	
1860	*Peek, Henry William, Esq. *Wimbledon-house, S.W.*
1861	Peel, Archibald, Esq. 56, *Portland-place, W.*
1858	1320Peel, Sir Robert, Bart., M.P. 4, *Whitehall-gardens, S.W.; and Drayton-manor, Tamworth.*
1846	*Pelly, Sir John Henry, Bart. *Upton, Essex.*
1863	Pember, Geo. H., Esq. *Leigham-avenue, Streatham, S.*
1859	*Pennant, George Sholto Douglas, Esq. *Penrhyn-castle, Bangor.*
1863	*Pennant, Col. S. S. Douglas, M.P. *Penrhyn-castle, Bangor, N.B.*
1853	Percy, Colonel the Hon. Henry M. (Guards). 11, *Portman-square, W.*
1860	Perkins, Frederick, Esq. *Mayor of Southampton.*
1860	Perowne, Rev. J. J. Stewart. *Divinity and Hebrew Lecturer, St. David's College, Lampeter, S. Wales.*
1859	Perry, Sir Erskine, Member Indian Council. 36, *Eaton-place, S.W.*
1859	Perry, William, Esq., H.B.M.'s Consul, Panama. *Athenæum Club, S.W.*
1862	1330*Perry, William, Esq. 9, *Warwick-road, Upper Clapton, N.E.*
1862	Peter, John, Esq. 33, *Prince's-gate, Hyde-park, W.*
1857	*Peters, William, Esq. 35, *Nicholas-lane, Lombard-street, E.C.*
1860	Petherick, John, Esq., H.B.M.'s Consul for the Sudan.
1858	Peto, Sir S. Morton, Bart., M.P. 12, *Kensington-palace-gardens, W.*
1861	Petrie, Alexander S., Esq. 4, *St. Mark's-square, N.W.*
1860	Petrie, Captain Martin, 14th Regiment. 4, *New-street, Spring-gardens, S.W.*
1862	Peyton, Col. John L. 93, *Great Russell-street, Bloomsbury, W.C.*
1854	Phelps, William, Esq. 18, *Montagu-place, Russell-square, W.C.*
1862	Phené, John Samuel, Esq. 34, *Oakley-street, Chelsea, S.W.*
1857	1340Phillimore, Capt. Augustus, R.N. 25, *Upper Berkeley-st., W.; and U.S. Club, S.W.*
1859	Phillimore, Chas. Bagot, Esq. *India Office, S.W.; and* 25, *Upper Berkeley-st., W.*
1843	Phillimore, John George, Esq., Q.C. 19, *Old-buildings, Lincoln's-inn, W.C.*
1863	Phillimore, Sir Robert. 5, *Arlington-street, S.W.*
1860	Phillimore, Wm. Brough, Esq., late Capt. Grenadier Guards. 5, *John-street, Berkeley-square, W.*
1860	Philip, George, Esq. 32, *Fleet-street, E.C.*
1830	*Phillipps, Sir Thomas, Bart., M.A., F.R.S., F.S.A. *Athenæum Club, S.W.; and Middle-hill, Broadway, Worcestershire.*
1854	Phillips, Major-General Sir B. Travell. *United Service Club, S.W.*
1856	Phillips, John, Esq., Solicitor. *Hastings.*
1859	Phinn, Thomas, Esq., Q.C. 50, *Pall-mall, S.W.*
1861	1350Pike, Frederick, Esq. 44, *Charing-cross, S.W.*
1852	*Pike, Commander John W., R.N. 26, *Old Burlington-street, W.; Junior United Service Club, S.W.*
1855	Pilkington, James, Esq., M.P. *Reform Club, S.W.; and Blackburn.*
1851	*Pim, Commander Bedford C. T., R.N. *Junior United Service Club, S.W.; and Tathwell-house, Belsize-park, N.W.*
1858	Pincott, James, Esq. *University College, London, W.C.; and Christchurch-road, Roupell-park, Brixton-hill, S.*

Year of Election.	
1859	Pinney, Colonel William, M.P. 30, *Berkeley-square, W.*
1858	Platen, His Excellency Count.
1860	Playfair, Capt. Robert Lambert. *Political Agent, Zanzibar.*
1860	Plowden, Charles Hood C., Esq. 15, *York-street, Portman-square, W.*
1856	*Plowes, John Henry, Esq. 39, *York-terrace, Regent's-park, N.W.*
1834	1360*Pocock, John I., Esq. *Puckrup-hall, Tewkesbury.*
1862	Pollard, Commander Edwin John, R.N.
1855	*Pollexfen, Capt. J. J. *India.*
1837	*Pollington, John Charles George, Viscount, F.R.A.S. *Meshley-park, near Leeds.*
1853	Pollock, General Sir George, G.C.B. *Clapham-common, Surrey, S.*
1835	*Ponsonby, Hon. Frederick G. B. 3, *Mount-street, Grosvenor-square, W.*
1860	Pook, Captain John. 6, *Colfe's Villas, Lewisham-hill, S.E.*
1857	Pope, Captain Wm. Agnew. 52, *Charles-street, Berkeley-square, W.*
1863	*Porcher, Commander Edwin A., R.N. 50, *Montagu-square, W.*
1853	Porter, Edwd., Esq. *Athenæum Club, S.W.; and* 26, *Suffolk-street, Pall-mall, S.W.*
1859	1370Pottinger, Lieut.-Colonel William. *Junior United Service Club, S.W.*
1861	*Pounden, Captain Lonsdale. *Junior United Service Club, S.W.; and Brownswood, Co. Wexford.*
1862	Povah, Rev. John V., M.A. 16, *Tavistock-square, W.C.*
1852	Powell, Lewis, Esq. *Port Lewis, Mauritius.*
1859	Power, E. Rawdon, Esq. 15, *Adam-street, Adelphi, W.C.*
1854	Power, John, Esq. 3, *Ingram-court, Fenchurch-street, E.C.*
1854	Power, John Arthur, Esq., M.A., B.M. 52, *Burton-crescent, W.C.*
1864	Powis, the Hon. E. R. *Market Place, Wells, Somersetshire.*
1860	Pratt, Hodgson, Esq.
1853	Price, Jas., Esq., M.D., F.R.C.S., &c. *Brixton, Surrey, S.*
1852	1380Price, James Glenie, Esq., Barrister-at-Law. 14, *Clement's-inn, W.C.*
1859	Price, Major R. Havard, 31st Bengal N. Infantry. *Bengal.*
1860	*Prickett, Rev. Thomas William, M.A., F.S.A. *University Club, S.W.*
1855	*Pringle, Thomas Young, Esq. 14, *Eaton-square, S.W.*
1845	Prinsep, Henry T., Esq. *Little Holland-house, Kensington, W.*
1859	Pritchard, Wm. Thos., Esq. *H.B.M.'s Consul, Fiji.*
1861	*Prodgers, Rev. Edwin. *The Rectory, Ayott St. Peter's, Herts.*
1852	Prout, John William, Esq., M.A., Barrister-at-Law. *Athenæum Club, S.W.; and Neasdon, Middlesex, N.W.*
1862	*Puget, Capt. J.
1860	Puller, Arthur Giles, Esq. *Athenæum Club, S.W.; and Youngsbury, Ware.*
1857	1390Purcell, Edward, Esq., LL.D. 2, *Maze-hill, Greenwich, S.E.*
1859	Purdon, Wm. H., Esq. *Executive Engineer, Punjab.*

Year of Election.	
1861	Rollo, Lord. 18, *Upper Hyde-park-gardens, W.; and Dumcrieff-castle, Moffat, N.B.*
1863	Rönn, M. Herman von. 77, *Addison-gardens, Kensington, W.*
1834	*Rose, the Right Hon. Sir George, F.R.S., LL.D. 4, *Hyde-park-gardens, W.; and* 25, *Southampton-buildings, Chancery-lane, W.C.*
1861	Rose, Jas. Anderson, Esq. *Wandsworth, Surrey, S.W.; and* 11, *Salisbury-st., W.C.*
1857	*Rose, Wm. A., Esq., Alderman. 63, *Upper Thames-street, E.C.; and Befions, Crawford.*
1864	Ross, B. R., Esq.
1857	Ross, John, Esq., M.A. 2, *Brabant-court, Philpot-lane, E.C.*
1863	Ross, Wm. Andrew, Esq. 7, *Albemarle-street, W.*
1844	1470*Rosse, William, Earl of, M.A., F.R.S. *Birrcastle, Parsonstown, King's County, Ireland.*
1864	*Roundell, C. S., Esq. 54, *Davies-steeet, Berkeley-square, W.*
1862	Roupell, Robert Priolo, Esq., M.A., Q.C. 13, *Park-lane, W.*
1839	*Rous, Vice-Admiral the Hon. Henry John. 13, *Berkeley-square, W.*
1864	Routh, E. J., Esq. *St. Peter's College, Cambridge.*
1862	Rowe, Sir Joshua, C.B., late Chief Justice of Jamaica. 10, *Queen Anne-street, Cavendish-square, W.*
1863	Rowley, Commr. C. C. 48, *Onslow-square.*
1856	Rucker, J. Anthony, Esq. *Blackheath, S.E.*
1861	*Rumbold, Charles James Augustus, Esq. *Downing College, Cambridge; and* 5, *Percival-terrace, Brighton.*
1861	Rumbold, Thomas Henry, Esq. 1, *Eccleston-square, S.W.*
1860	1480Rumley, Major-General Randall, V.P. Council of Military Education. 12, *Cadogan-place, S.W.*
1858	*Russell, Arthur John Edward, Esq., M.P. 2, *Audley-square, W.*
1830	*Russell, Jesse Watts, Esq., D.C.L., F.R.S.
1830	Russell, John, Earl, F.R.S. 37, *Chesham-place, S.W.; Pembroke-lodge, Richmond, S.W.; Endsleigh-ho., Devon; and Gart-ho., near Callandar, N.B.*
1860	Russell, Wm. Howard, Esq., LL.D. 18, *Sumner-place, Onslow-square, S.W.*
1860	Rutherford, John, Esq. 2, *Cavendish-place, Cavendish-square, W.*
1857	*Ryder, Capt. Alfred P., R.N. *U.S. Club, S.W.; and Launde-abbey, Uppingham.*
1864	Ryder, G., Esq. 5, *Tanfield-court, Temple, E.C.*
1852	Sabine, Major-General Edw., R.A., Pres. R.S., F.R.A.S., &c. &c. 13, *Ashley-place, Victoria-street, Westminster, S.W.; and Woolwich, S.E.*
1847	St. Asaph, Rt. Rev. Thos. Vowler Short, Bishop of. *Palace, St. Asaph, N. Wales.*
1857	1490St. David's, Connop Thirlwall, Bishop of. *Abergwlly-palace, Carmarthen.*
1863	St. George, Brig.-Gen. J. 17, *Rutland-gate, S.W.*
1863	St. John R. H. St. Andrew, Esq., 60th Rifles.
1862	St. John, Spenser, Esq., Chargé d'Affaires, Port-au-Prince, Haiti. 28, *Grove-end-road, St. John's-wood, N.W.*
1857	St. Vincent, Edward, Viscount. *Meaford, Stone, Staffordshire.*

Year of Election.	
1863	Sale, Lieut., M.T., R.E. *Rugby.*
1845	*Salomons, David, Esq., M.P., Alderman, F.R.A.S. 3, *Great Cumberland-place, Hyde-park, W.; and Broom-hill, near Tunbridge-Wells.*
1863	*Salt, Henry, Esq. 22, *Gordon-square, W.C.*
1861	Salting, William Levering, Esq. 13, *King's Bench-walk, Temple, E.C.*
1861	*Sandbach, Wm. Robertson, Esq. 10, *Princes-gate, Hyde-park, S.W.*
1862	1500Sanford, Major Henry Ayshford. 23, *Cadogan-place, W.; and Nynehead-court, Wellington, Somerset.*
1863	Santos, Le Chev. G. dos. 12, *Gloucester-place, Portman-square, W.*
1860	Sarel, Lt.-Col. H. A., 17th Lancers. *Army and Navy Club, S.W.; and Shanghae.*
1862	Sargood, F. J., Esq. *Moorgate-street-buildings, E.C.*
1860	Sartoris, Alfred, Esq. 64, *Rutland-gate, S.W.*
1852	Saumarez, Captain Thomas, R.N. *Army and Navy Club, S.W.; and Millhook-house, Jersey.*
1863	Sawyer, Col. Charles, 6th Dragoon Guards. *Heywood-lodge, Maidenhead.*
1863	Sayer, Captain Frederick. *Gibraltar; and Manor-house, Richmond, S.*
1838	Scarlett, Lieut.-General the Hon. Sir J. Yorke, K.C.B. *Portsmouth.*
1861	Schenley, Edward W. H., Esq. 14, *Princes-gate, S.W.*
1859	1510Scott, Lord Henry. 37, *Belgrave-square, S.W.*
1861	*Scott, Hercules, Esq. *Brotherton, near Montrose, N.B.*
1864	Scott, John, Esq. 3, *Chester-place, Hyde-park, W.*
1855	Scott, Vice-Admiral Sir James, K.C.B. *United Service Club, S.W.*
1862	Scott, Rev. Thomas, M.A. 1, *Mount-place, London Hospital, E.*
1863	Scovell, George, Esq. 34, *Grosvenor-place, S.W.*
1840	*Scrivener, J. F. P., Esq. 20, *Bryanston-square, W.; and Ramridge-house, near Andover, Hants.*
1861	Searight, James, Esq. *Bedford-hill, Balham, S.*
1830	*Sedgwick, the Rev. A., Woodwardian Lecturer, M.A., F.R.S. *Athenæum Club, S.W.; and Cambridge.*
1862	Seemann, Berthold, Esq., PH. DR., F.L.S. 22, *Canonbury-square, N.*
1858	1520*Serocold, Charles P., Esq. *Brewery, Liquorpond-street, E.C.*
1853	Sevin, Charles, Esq. 155, *Fenchurch-street, E.C*
1853	Sewell, Henry, Esq. 58, *Old Broad-st., E.C.; and Stamford-hill, N.*
1858	Seymour, George, Esq. 17, *Gracechurch-street, E.C.; and* 12, *Sussex-square, Hyde-park, W.*
1855	Seymour, Admiral Sir Geo. F., K.C.B., G.C.H. 115, *Eaton-square, S.W.*
1853	*Seymour, Henry Danby, Esq., M.P. 39, *Upper Grosvenor-street, W.; Knoley-Hindon, Wilts; and Glastonbury, Somersetshire.*
1854	*Shadwell, Captain Charles F. A., R.N., C.B. *Slough.*
	*Shadwell, Lieut.-Col. Lawrence, C.B. 91, *Plymouth-grove, Manchester.*
1860	Shaffner, Col. Taliaferro P., U.S. 62, *Moorgate-street, E.C.;* 49, *Weymouth-street, Portland-place, W.; and Louisville, Kentucky, U.S.*
1861	
1856	*Share, James Masters, Esq., R.N. *H.M.S. 'Calcutta,' East Indies; and Front-street, Tynemouth, Northumberland.*
1861	1530Sharp, Peter, Esq. *Care of Edward B. Bostock, Esq.,* 16, *Lorraine-pl., Holloway, N.*

Year of Election.	
1861	*Sharpe, William John, Esq. 1, *Victoria-street, Westminster, S.W.; and Norwood, Surrey, S.*
1861	Shaw, John Ralph, Esq. *Sand-hey, Hoylelake, Birkenhead.*
1858	Shea, John, Esq., M.D., Surgeon R.N. 84, *Blackfriars-road, S.*
1846	Sheffield, George A. F. C., Earl of. 20, *Portland-pl., W.; and Sheffield-pk., Sussex.*
1857	Sheil, Major-Gen. Sir Justin, K.C.B. 13, *Eaton-place, Belgrave-square, S.W.*
1861	Shephard, Chas. Douglas, Esq., Surg. R.N. *The Elms, near Cheadle, Staffordshire.*
1861	Shepherd, Rev. Edward John, M.A. *Trotterscliffe, Kent.*
1860	Sherer, John, Esq.
1860	Sheridan, H. Brinsley, Esq., M.P. *Bellefield-house, Parson's-green, Fulham, S.W.*
1863	154oSheridan, Richd. B., Esq., M.P. 48, *Grosvenor-place, S.W.*
1857	Sherrin, Joseph Samuel, Esq., LL.D., PH. DR. *Leyton-house, Leyton-crescent, Kentish-town, N.W.*
1859	*Sherwill, Lt.-Col. W. S., F.G.S. *Prof. of Surveying, Civil Engr. College, Calcutta; and Perth, N.B.*
1858	*Shipley, Conway M., Esq. *Army and Navy Club, S.W.; and Raheny, Dublin.*
1862	Showers, Major Charles S. *Post-office, Bombay.*
1856	Shuttleworth, Sir J. P. Kay, Bart. 38, *Gloucester-square, W.; and Gawthorp-hall, Burnley, Lancashire.*
1859	Silver, the Rev. Fred., M.A., F.R.A.S. *Norton Rectory, Market Drayton, Salop.*
1859	*Silver, Stephen Wm., Esq. 66, *Cornhill, E.C.; and Norwood-lodge, Lower Norwood, S.*
1853	Silver, William, Esq., M.A., Barrister-at-Law. *Bessborough-street, S.W.*
1859	Sim, Captain Charles, R.E., Surveyor-General, Ceylon.
1860	155oSim, John Coysgame, Esq. 13, *Victoria-street, Westminster, S.W.*
1853	Simmons, Edward R., Esq., Barrister-at-Law. *Ellerslie, Chichester.*
1848	Simmons, Colonel John L. A., R.E., C.B. *H. B. M.'s Consul, Warsaw; United Service Club, S.W.*
1853	Simpkinson, Lieut. Francis G., R.N. 55, *Victoria-street, Westminster, S.W.*
1862	Simpson, Henry Bridgeman, Esq. 44, *Upper Grosvenor-street, W.*
1861	Simpson, James, Esq., C.E., F.G.S. 29, *Great George-street, Westminster, S.W.*
1863	*Simpson, Wm., Esq. 64, *Lincoln's-inn-fields, W.C.*
1857	Sitwell, Major W. H. *Junior United Service Club, S.W.*
1858	Skelmersdale, Edward, Lord. *Lattom-park, Ormskirk, Lancashire.*
1863	Skrine, Hy. D., Esq. *Warleigh-manor, near Bath.*
1862	156oSkinner, Russell Morland, Esq. 8, *Westborne-crescent, Hyde-park, W.*
1861	Sladen, Rev. Edward Henry Mainwaring. *Alton, near Marlborough, Wilts.*
1861	Sligó, G. J. Browne, Marquis of. 14, *Mansfield-st., W.; and Westport, Co. Mayó.*
1860	*Smith, Augustus Henry, Esq. *Bron Ceris, Carnarvon, North Wales.*
1855	Smith, Rev. Brownrigg, M.A. *Shepherd-lane, Brixton, S.*
1859	Smith, Edward, Esq. *Dublin Castle.*
1836	*Smith, Edward Osborne, Esq., F.S.A., &c. 21, *Cornwall-terrace, Regent's-park, N.W.*
1853	Smith, George, Esq. *Peru.*

Year of Election.	
1857	Smith, George R., Esq. 73, *Eaton-square, S.W.; and Telsden-park, Surrey.*
1861	Smith, H. S. Dazley, Esq., M.A. *United University Club, S.W.*
1860	1570Smith, Henry W. Seymour, Esq. *Sheen-mount, East Sheen, Surrey.*
1857	*Smith, Horace, Esq. *Broxbourne-borough, Hoddesdon.*
1830	*Smith, James, Esq., F.R.S.L. & E. *Athenæum Club, S.W.; & Jordan-hill, Glasgow.*
1861	Smith, Jervoise, Esq. 47, *Belgrave-square, S.W.*
1854	Smith, John, Esq., Memb. Geograph. Soc. Bombay. 7, *Mincing-lane, E.C.*
1853	Smith, John Harrison, Esq. 49, *Inverness-terrace, W.*
1853	Smith, John Henry, Esq. 16, *Pall-mall, S.W.; and Purley, Croydon, Surrey.*
1861	Smith, J. Sidney, Esq., Barrister-at-Law. *Sidney-lodge, Wimbledon-common, S.W.*
1861	*Smith, Joseph Travers, Esq. 25, *Throgmorton-street, E.C.*
1838	*Smith, Octavius Henry, Esq. *Thames-bank, Westminster, S.W.*
1857	1580Smith, Captain Philip, Grenadier Guards.
1839	Smith, Rev. R. Carter. *Charlton-rectory, S.E.*
1841	*Smith, Thomas, Esq.
1860	Smith, William, Esq., C.E. 19, *Salisbury-street, Strand, W.C.*
1859	*Smith, W. Castle, Esq. 1, *Gloucester-terrace, Regent's-park, N.W.*
1857	Smith, Wm. Gregory, Esq. *Hudson-bay Company, Fenchurch-street, E.C.*
1859	Smith, William Henry, Esq. 1, *Hyde-park-street, W.*
1837	*Smyth, Rear-Adm. William, R.N. *Richmond-house, Ryde, Isle of Wight.*
1830	*Smyth, Vice-Admiral William Henry, K.S.F., D.C.L., F.R.S., V.P.S.A., F.R.A.S., Hon. M.R.I.A., Corr. Inst. Fr., &c. &c. *Athenæum Club, S.W.; and St. John's-lodge, near Aylesbury, Bucks.*
1850	*Smythe, Colonel William J., R.A.
1863	1590Snowden, Francis, Esq., M.A. 1, *Dr. Johnson's-buildings, Temple, E.C.*
1861	Soldan, Don Marino Felipe Paz. *Lima; and* 21A, *Hanover-square, W.*
1839	*Somers, Charles, Earl. 33, *Prince's-gate, S.W.; Eastnor-castle, Herefordshire; and The Priory, Reigate, Surrey.*
1862	Somerset, Capt. Leveson E. H., R.N. *Southgate, near Leighton-Buzzard.*
1858	*Somes, Joseph, Esq., M.P. *Fortismere, Muswell-hill, N.*
1855	Sopwith, Thomas, Esq., M.A., C.E., F.R.S. 43, *Cleveland-sq., Hyde-park, W.; and Allenheads, Haydon-bridge, Newcastle-on-Tyne.*
1845	*Sotheby, Lt.-Col. Fred. S., C.B., F.R.A.S. 3, *Portugal-street, Grosvenor-sq., W.*
1861	South, John Flint, Esq. *St. Thomas' Hospital, S.E.; and Blackheath-park, S.E.*
1860	Southesk, James Carnegie, Earl of. *Kinnaird-castle, Brechin, N.B.*
1853	Southey, Henry Sedgfield, Esq., Barrister-at-Law. *Athenæum Club, S.W.*
1860	1600*Southey, Jas. Lowther, Esq. *Leacroft, Hurstpierpoint, Sussex.*
1857	*Speke, Capt. John Hanning. *Jordans, Ilminster, Somerset.*
1863	Spickernell, Dr. Geo. E., Principal of Eastman's Royal Naval Establishment. *Eastern-parade, Southsea.*
1861	Spofforth, Markham, Esq. 3, *Porchester-terrace, W.*
1830	*Spottiswoode, A., Esq. 12 *James-street, Buckingham-gate.*
1855	*Spottiswoode, William, Esq., F.R.S. 50, *Grosvenor-place, S.W.*
1859	*Spratt, Capt. Thos. A. B., R.N., C.B. *Mount Ephraim, Tunbridge-wells, Kent.*

Year of Election	
1857	Spring-Rice, Hon. S. E. (Deputy-Chairman of the Board of Customs). *Mount Trenchard, Foynes, Ireland.*
1859	Stafford, Edward W., Esq. *Colonial Secretary of New Zealand.*
1853	Stanford, Edward, Esq. 6, *Charing-cross, S. W.*
1855	1610Stanhope, Philip Henry, Earl, Pres. Soc. of Antiquaries. 3, *Grosvenor-place-houses, Grosvenor-place, S. W.; and Chevening, Sevenoaks, Kent.*
1860	*Stanhope, Walter Spencer, Esq. *Cannon-hall, Barnsley, Yorkshire.*
1856	Staniland, William, Esq., C.E. *The Crescent, Selby, Yorkshire.*
1856	Stanley, Edmund Hill, Esq. *Craven-hotel, Strand, W.C.*
1853	*Stanley, Edward Henry, Lord, M.P., D.C.L. 23, *St. James's-square, S. W.*
1863	Stanton, Geo., Esq. *Coton-hill, Shrewsbury; and Conservative Club, S. W.*
1856	Statham, John Lee, Esq. 60, *Wimpole-street, W.*
1863	*Staveley, Miles, Esq. *Old Sleningford-hall, Ripon.*
1858	Staveley, Thos. G., Esq. *Foreign Office; and* 24, *Cambridge-st., Hyde-park, W.*
1850	Steele, Colonel Thomas M., C.B., Coldstream Guards. 36, *Chester-square, S. W.*
1830	1620*Stephen, Sir George. *Melbourne.*
1857	Stephenson, Sir R. Macdonald, C.E. 6, *Upper Hyde-park-gardens, W.; and East-cottage, Worthing.*
1860	Sterling, Col. Sir Anthony. *The White Cottage, South-pl., Knightsbridge, W.*
1862	Sterry, Henry, Esq. 7, *Paragon, Southwark, S.E.*
1854	Stevens, Frederic Perkins, Esq. *Melbourne, Australia.*
1855	Stevens, Henry, Esq., F.S.A. 4, *Trafalgar-square, Charing-cross, W.C.*
1841	Stevenson, Thomas, Esq., F.S.A. 37, *Upper Grosvenor-street, W.*
1861	Stewart, Alex. Jas. Robt., Esq. 12, *Belgrave-square, S.W.; and Ards-house, Donegal.*
1860	*Stewart, Major J. H. M. Shaw, Royal Madras Engineers. *Creebridge-house, Newtown-Stewart, N.B.*
1860	Stewart, Major Patric, Bengal Engineers. 8, *Lower Belgrave-street, S. W.*
1860	1630Stirling, Capt. Frederick Henry, R.N. *H. M. S. 'Hero.'*
1841	Stirling, Vice-Admiral Sir James. *United Service Club, S. W.*
1860	*Stirling, William, Esq., M.P. 128, *Park-st., Grosvenor-sq., W.*
1860	Stirling, Sir Walter, Bart. 36, *Portman-square, W.*
1860	Stocker, John Palmer, Esq. 93, *Oxford-terrace, Hyde-park, W.*
1858	Stoddart, George, Esq. *Collinwood, Torquay, Devon.*
1845	*Stokes, Capt. John Lort, R.N. *U. S. Club, S. W.; and Haverfordwest, Wales.*
1858	Stopford, James Sydney, Esq. 18, *Savile-row, W.*
1861	Stracey, Sir Henry, Bart., M.P. 39, *Dover-street, Piccadilly, W.*
1861	Strange, Lieut.-Col. Alexander. 16, *Ovington-square, Brompton, S W.*
1858	1640Strangford, Percy Ellen, Viscount. 58, *Great Cumberland-street, W.*
1858	Stratford de Redcliffe, Stratford Canning, Viscount. 29, *Grosvenor-square, W.*
1860	Stratheden and Campbell, Wm. F. Campbell, Lord. *Stratheden-house, Knightsbridge, S. W.*
1864	Straton, N. D. J., Esq. *Aylestone, Leicester.*
1860	Strickland, Edward, Commissary-General. *Barbadoes, W. Indies.*

Year of Election	
1853	Strutt, George H., Esq., F.R.A.S.
1858	Strutt, Captain Hammel Ingold. *Examiner Royal Mail Steam Company, Southampton.*
1859	*Strutt, Captain William. *Palace, Kew.*
1853	*Strzelecki, Count P. E. de, C.B., F.R.S. 20*b*, *Savile-row, W.*
1859	Stuart, Lieut.-Col. J. F. Dudley Crichton, M.P., Grenadier Guards. 28, *Charles-street, St. James's, S.W.*
1861	1650Stuart, Vice-Chancellor Sir John. 11 *and* 12, *Old-buildings, Lincoln's-inn, W.C.*; 5, *Queen's-gate, Hyde-park, W.*; *and Grushernish, Isle of Skye, Invernesshire.*
1834	*Sturge, Thomas, Esq. *Northfleet, Kent.*
1833	Sturt, Capt. Charles, F.L.S. *St. Edmond's, Tivoli, Cheltenham.*
1862	Stutfield, William, Esq. 15, *Leinster-terrace, Hyde-park, W.*; *and Mystoke-park, Canterbury.*
1858	Sudeley, Lord. *Guards' Club, S.W.*
1857	Sullivan, Captain Bartholomew J., R.N., C.B. *Board of Trade, S.W.*
1860	Sullivan, John W., Esq. 11, *Home-park, Stoke, Devonport.*
1862	Sumridge, Henry Arthur Dillon, Esq., B.A. 31, *Lower Grosvenor-street, W.*
1862	Surtees, Capt. Charles Fieville. *Chalcott-house, Long Ditton, Surrey.*
1861	*Sutherland, George Granville William, the Duke of. *Stafford-house, St. James's Palace, S.W.*
1856	1660Sutherland, Kenneth L., Esq., Paymaster R.N., Barrister. *Junr. U.S. Club, S.W. Chesterfield-house, Weymouth; and the Royal Yacht, Portsmouth.*
1840	*Sutherland, Robert, Esq. *Carmona, Bank, Dunoon, Argyleshire.*
1857	Swanzy, Andrew, Esq. 38, *Cannon-street, E.C.*
1857	*Sweeting, Robert, Esq. 32, *Nicholas-lane, Lombard-street, E.C.*; *and London-hill, Harrow.*
1836	*Swinburne, Rear-Admiral Charles H. 18, *Grosvenor-place, W.*; *and Capheaton, near Newcastle-upon-Tyne.*
1862	*Swinburne, Lieut. Sir John, Bart., R.N. *Capheaton, Newcastle-on-Tyne.*
1859	Sykes, Christopher, Esq. *Sledmere, Malton.*
1863	Swinhoe, Robert, Esq., H.B.M. Consul, Formosa. 18, *Royal Avenue-terrace, Chelsea, W.*
1851	Sykes, Colonel William Henry, M.P., F.R.S., Hon. M.R.I.A. *Athenæum Club, S.W.*; *and* 47, *Albion-street, Hyde-park, W.*
1852	*Synge, Major Millington H., R.E. *Pembroke Dock.*
1852	1670Tagart, Courtenay, Esq. *Reform Club, S.W.*; *and Paris.*
1859	Tagart, Francis, Esq. 31, *Craven-hill-gardens, Hyde-park, W.*
1857	*Tait, Robert, Esq. 14, *Queen Anne-street, W.*
1861	Talbot de Malahide, Lord. *Malahide Castle, Co. Dublin.*
1861	Tayler, Joseph Walter, Esq. 42, *Tavistock-terrace, Upper Holloway, N.*
1861	Taylor, Lieut. A. Dundas, R.N.
1854	*Taylor, John Stopford, Esq., M.D. 1, *Springfield, St. Anne-street, Liverpool.*

Year of Election.	
1863	Taylor, John, Esq. 1 *Leadenhall-street; and Egremont-villa, Lower Norwood, Surrey.*
1863	Taylor, John, Esq. *Adelaide, Australia.*
1863	Taylor, Col. R. C. H. *Sandgate; and Carlton Club, S. W.*
1857	1680Teesdale, John M., Esq. *Downage-house, Hendon, N. W.*
1863	Tegg, Wm., Esq. 13, *Doughty-street, Mecklenburg-square, W.C.*
1860	Templeton, John, Esq. 12, *College-terrace, Islington, N.*
1857	Tennant, Professor James. 149, *Strand, W.C.*
1859	Tennant, Major J. F., Bengal Engrs. *Director of the Observatory, Madras.*
1830	*Thatcher, Colonel, E.I.C.
1861	Theobald, James, Esq., M.A. *R. T. Yacht Club, Albemarle-street, W.; and Grays, Essex.*
1863	Thomas, G., Esq. *Queen's-gardens-terrace, Hyde-park, W.*
1854	Thomas, Henry Harrington, Esq. *Lansdowne-crescent, Bath.*
1859	Thompson, Thomas A., Esq. *London and County Bank, Cambridge.*
1854	1690Thompson, William C., Esq.
1863	Thomson, James, Esq. *Motcombe-house, East Moulsey.*
1863	Thomson, James Duncan, Esq., Portuguese Consul. *St. Peter's Chambers, Cornhill, E.C.*
1848	*Thomson, J. Turnbull, Esq. *Chief Surveyor, Otago, New Zealand.*
1861	*Thomson, Ronald Ferguson, Esq., 1st Attaché to the Persian Mission. *Clifford-inn, Fleet-street, E.C.*
1854	*Thomson, Thomas, Esq., M.D. *Hope-house, Kew, W.*
1862	*Thorne, Augustus, Esq. 4, *Cullum-street, City, E.C.*
1847	Thornton, Rev. Thomas Cooke, M.A., M.R.I. *Brock-hall, near Weedon, Northamptonshire.*
1858	Thorold, Rev. A. W. 16, *Bedford-square, W.C.*
1854	Thorold, Henry, Esq. *Cuxwold, Lincolnshire.*
1861	1700Thrupp, John, Esq. 7, *Warwick-square, Belgrave-road, S. W.*
1859	Thuillier, Lt.-Colonel H. L., Surveyor-General of India. *Calcutta.*
1861	Thurburn, Capt. Henry. 5, *Queensborough-terrace, Bayswater, W.*
1864	*Thurburn, Hugh, Esq. 22, *Dover-street, Piccadilly; and Oriental Club, W.*
1861	Thurlow, the Hon. Thos. J. Hovell. *British Embassy, Paris.*
1846	*Tindal, Charles John, Esq. *New South Wales.*
1839	*Tinne, John A., Esq. *Briarley, Aigburth, near Liverpool.*
1862	Todd, John, Esq. *Sydney.*
1853	*Tomline, George Taddy, Esq., F.S.A. *Chandos-house, Broadstairs.*
1853	Tomline, George, Esq., M.P. 1, *Carlton-house-terrace, S. W.*
1835	1710*Tooke, Arthur Wm., Esq., M.A. *Pinner-hill-house, near Watford, Middlesex.*
1864	Tottenham, Rev. John W., B.A. *Quarry-villa, St. Leonard's-on-sea, Sussex.*
1856	Torrance, John, Esq. 5, *Chester-place, Hyde-park-square, W.*
1859	Townsend, John, Esq., Lieut. R.N. *Lona, Weston-super-Mare.*
1846	*Towry, George Edward, Esq.
1858	Towson, J. Thomas, Esq. *Secretary Local Marine Board, Liverpool.*

Year of Election.	
1863	*Tozer, Rev. H. F., M.A. *Exeter College, Oxford.*
1864	Tracy, the Hon. C. H. 11, *George's-street, W.*
1861	Train, George Francis, Esq.
1863	*Travers, Arch., Esq. 4, *College-villas, Finchley-new-road, N. W.*
1862	1720Travers, Franklin, Esq. *Thames-villa, Walton-on-Thames; and Cavendish Club, W.*
1860	Travers, John Ingram, Esq. 19, *Swithin's-lane, E.C.*
1859	Tremlett, Rev. Francis W., M.A. *Belsize-park, Hampstead, N. W.*
1863	Trestrail, Rev. Frederick. *Stanmore-villa, Beulah-hill, Upper Norwood, S.*
1862	Trevelyan, Sir Charles Edward, K.C.B. 8, *Grosvenor-crescent, S. W.*
1830	Trevelyan, Sir Walter Calverly, Bart., M.A., F.S.A., F.L.S., F.R.S.N.A., &c. *Athenæum Club, S. W.; Wallington, Northumberland; and Nettlecombe, Somerset.*
1860	Trigg, John Davies, Esq. *Magdalen Hall, Oxford.*
1864	Trimmer, Edmund, Esq. 17, *Marine-square, Brighton.*
1858	Trotter, Alexander, Esq. *Devonshire-place-house, New-road, N. W.*
1839	*Truman, Dr. Matthew. 40, *Norland-square, Notting-hill, W.*
1862	1730Tuckett, Francis Fox, Esq. *Frenchay, near Bristol.*
1835	*Tuckett, Frederick, Esq. 4, *Mortimer-street, Cavendish-square, W.*
1852	Tudor, Edward Owen, Esq., F.S.A. 46, *Westbourne-terrace, W.*
1857	Tudor, Henry, Esq. 46, *Westbourne-terrace, W.*
1862	Tuke, Harrington, Esq., M.D. 37, *Albemarle-street, W.*
1864	Turnbull, George, Esq., C.E., F.R.A.S. 39, *Craven-hill-gardens, W.*
1834	*Turnbull, Rev. Thomas Smith, F.R.S. *University Club, S. W.; and Blofield, Norfolk.*
1863	Turner, Thos., Esq. *Guy's Hospital, Southwark, S.*
1863	Twentyman, Wm. H., Esq. *Manor-house, St. John's-wood, N. W.*
1863	*Twiselton, Hon. E. F. *Rutland-gate, S. W.*
1849	1740Twiss, Travers, Esq., D.C.L., F.R.S. 19, *Park-lane, W.*
1858	Twyford, Capt. A. W., 21st Hussars. 108, *Cambridge-st., Warwick-sq., S. W.; Cavalry Depôt, Canterbury; Reform Club, S. W.; and Clayton Wickham, Hurstpierpoint, Sussex.*
1859	Tytler, Capt. W. Fraser. *Aldowrie, Inverness.*
1862	Tyler, Edward Burnet, Esq. 6, *St. Boniface-terrace; Ventnor, I. of Wight.*
1862	*Tyler, George, Esq. 24, *Holloway-place, Holloway-road, N.*
1862	Underhill, Edward Bean, Esq. 13, *Camden-square, Camden-town, N. W.*
1861	Ussher, John, Esq. *Arthur's Club, St. James's Street, S. W.*
1858	*Uzielli, Theodosius, Esq. 114, *Piccadilly, W.*
1844	*Vacher, George, Esq. *Manor-house, Teddington.*
1862	*Vander Byl, P. G., Esq. 3, *Upper Hyde-park-gardens, W.*
1845	1750*Vane, Lord Harry G., M.P. 1, *Grosvenor-place-houses, S. W.*

Year of Election.	
1858	Vardon, Arthur, Esq. *Worth, Crawley, Sussex.*
1857	Vardon, Thomas, Esq. *Library, House of Commons, Palace, Westminster, S.W.*
1863	Varley, C. F., Esq., C.E. *Telegraph-street.*
1856	*Vaughan, James, Esq., F.R.C.S., Bombay Army. *Bombay.*
1861	Vaughan, J. D., Esq., Assist. Pres. Councillor Police Magistrate of Singapore.
1861	Vaughan, Nash Vaughan Edwards, Esq. *Rheola, near Neath; and Lanelay, near Pontyfield, Glamorganshire.*
1849	Vaux, William S. W., Esq., M.A, F.S.A. *British Museum, W.C.*
1852	*Vavasour, Sir Henry M., Bart. *Spaldington-hall, Yorkshire.*
1855	Vavasseur, James, Esq. 2, *De Crespigny-park, Denmark-hill, S.*
1860	1760Verbeke, Frederick, Esq. 41, *Victoria-street, Westminster, S.W.*
1863	*Vereker, the Hon. H. P., LL D., H.M. Consul at Rio Grande do Sul. 20, *Green-street, Grosvenor-square, W.*
1862	Verner, Edward Wingfield, Esq. 86, *Eaton-square, S.W.; and Cook-abbey, Bray, Co. Wicklow.*
1862	Verney, Lieut. Edmond H., R.N. *H.M.S. 'Grappler.'*
1837	*Verney, Major Sir Harry C., Bart., M.P., F.R.A.S. *Travellers' Club, S.W.*; 32, *South-street, Grosvenor-square, W.; and Claydon-house, Bucks.*
1857	Verrey, Charles, Esq.
1852	Verulam, James Walter, Earl of. *Gorhambury, near St. Alban's; Barry-hill, Surrey; and Messing-hall, Essex.*
1859	Vesey, Arthur, Esq. *Long Ditton, Kingston, Surrey, S.W.*
1830	Vetch, Captain James, R.E., F.R.S. 48, *Finchley-road, St. John's Wood, N.W.*
1857	Vincent, John, Esq. 4, *Granville-park, Blackheath, S.E.*
1858	1770Vines, William Reynolds, Esq., F.R.A.S. 4, *Thavies inn, Holborn-hill, E.C.*
1863	Vivian, Major Quintus, late 8th Hussars. 17, *Chesham-street, S.W.*
1838	*Vyvyan, Sir Richard Rawlinson, Bart., F.R.S. *Trelowarren, Cornwall.*
1852	Wade, Mitchell B., Esq. 66, *South John-street, Liverpool.*
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Plymouth Sound and Hamoaze.

3.—Gulf of Finland (2 sheets, East and West).
Baltic: Memel to Libau.
,, Libau to Lyserört.
Baltic Sea, in 3 sheets.

4.—River Adour to Bayonne.

5.—Saida (Syria).
Island of Rhodes.
Ben-Ghazi.
Maltese Islands.
Bosphorus.
Dardanelles.
Gulf of Iskanderûn to Markhôb.
Ceuta and the adjacent coast.

Maps, Charts, &c.	*Donors.*

ADMIRALTY—

Valetta Harbour.
Marseilles Port and Roadstead.
Plan of Acre and Bay of Haifa (Syria).
Plan of the Cedars of Lebanon.
Bay of Acre.
Islands of Polykandro, Siknio, and Nio.
Poro Bay and Port Nikolo (Crete).
Adriatic Sea.
Gulf of Smyrna.
Zante Bay.

6.—Great Egg Harbour to Albemarle Sound.
St. John's River.
St. Helena's Sound (South Carolina).
St. Simon's Sound and Brunswick Harbour (Georgia).
New Bedford Harbour (Massachusetts).
Ipswich and Annisquam Harbours (U.S.).
Harbour of Toronto.
Gaspé and Mal Bays (Gulf of St. Lawrence).
North Polar Sea.
Cape Cod or Province Town Harbour.
Nantucket Shoals to Block Island.
Burin Harbour.
St. Louis Sound and Inlets (Labrador).
River Petit Condiac and Cumberland Basin.

7.—North Atlantic Ocean.

8.—Atchafalaya Bay (Gulf of Mexico).
Bermuda Islands.
Lights in the West Indies.
West Indies (Sheet No. 2).
Port Royal, &c.
Tampico Harbour.
Gulf of Mexico, from Punta Delgada to Anton Lizard.
Port Royal and Kingston Harbour.
St. Pierre Roadstead.
The Grenadines.
Martinique.

9.—River Surinam.
Eastern Entrance to Magelhaen's Straits.
Straits of Magelhaen.
Rio de la Plata.

10.—San Diego Bay (California).
Vancouver Island.
Johnston and Broughton Straits (British Columbia).
Harbours in the Straits of Georgia (British Columbia).
..... Discovery Passage (British Columbia).
Fraser River to N.E. Point of Texada (British Columbia).
Texada Island to Johnston Strait.
Sydney Inlet to Natinat (Vancouver Island).

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Red Sea.
Coast of Africa from Cape Coast Castle to Badagry.
River Ogun, Abbeokuta.
Rivers Brass and St. Nicholas.
River Zambesi.
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Banog or Ooloogan Bay (Palawan).
Straits of Sunda.
Java.
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Point de Galle Harbour.

13.—Yang-tse-Kiang, chart of, from Shanghai to Nankin.
Wei-Hai; Wei Harbour (China).
Seto-Uchi, or Inland Sea of Japan.
West Entrance to Seto-Uchi or Inland Sea (enlarged scale).
Port Royalist.
Malampaya Sound (Palawan, W. Coast).
Point Emergency to St. Paul's Bay (Palawan, W. Coast).
Mutlah River (Bay of Bengal).
Saigon River (Cochin China).
Australia East Coast.
....., Keppel to Percy Island.
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Nagasaki Harbour.
Tsu-Sima Sound (Straits of Corea).
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..... Entrance to.
Wallaroo and Tipara Harbours, Spencer Gulf, Australia.
Port Augusta (Spencer Gulf, Australia).
Port of Hobart Town, Tasmania.
Reef Anchorages in the Australian Coral-Reef Sea.

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MISCELLANEOUS—

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Diagrams to facilitate the obtaining a ship's position by Sumner's method.

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General Instructions for the Hydrographic Surveyor to the Admiralty.
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French Charts (104) in continuation—viz., Nos. 1868; 1879-80; 1885-86; 1892-1978; 1989; 1983-86; 1988-94, all inclusive.
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Journal Maps, three in number, viz:—Part of British Columbia (Begbie, Mayne, Palmer, Downie); Yang-tsze-Kiang (Blakiston); N.W. Australia (F. T. Gregory, 1861). By J. Arrowsmith, 1862.
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PRESENTATION

OF THE

ROYAL AWARDS

TO MR. F. T. GREGORY FOR HIS SUCCESSFUL EXPLORATIONS IN WESTERN AUSTRALIA; AND TO MR. JOHN ARROWSMITH FOR THE VERY IMPORTANT SERVICES HE HAS RENDERED TO GEOGRAPHICAL SCIENCE IN GENERAL, AND ESPECIALLY TO THE ROYAL GEOGRAPHICAL SOCIETY FROM ITS FOUNDATION TO THE PRESENT TIME.

GOLD WATCHES, BEARING HONORARY INSCRIPTIONS, WERE ALSO AWARDED TO MR. WILLIAM LANDSBOROUGH, TO MR. JOHN M'KINLAY, AND TO MR. FREDERICK WALKER, FOR THEIR SUCCESSFUL EXPLORATIONS IN AUSTRALIA.

THE PRESIDENT, after recapitulating the reasons assigned in the Report of the Council for the adjudication of the Founder's Medal to Mr. Frank T. Gregory, enlarged upon the importance to geographers as well as to colonists of the last researches of that gentleman, in which he had so successfully and with such precision explored a large well-watered and fertile region to the north-east of the colony of West Australia, and had thus won for himself a renown which placed him side by side with his distinguished brother, Mr. Augustus Gregory, the intrepid explorer of the northern and north-eastern shores of that great continent. He further remarked, that among Australian surveyors and astronomical observers, Mr. Frank Gregory had rendered himself conspicuous by collecting geological specimens; in doing which, on the occasion of one of his former journies to the west and south-west of the settled country, he was the first to assign the true age of certain secondary formations, the existence of which in Australia had been previously unknown. Having particularly adverted to the foresight and sagacity displayed by Mr. Gregory in organising his last great expedition during his previous visit to England, the President spoke of the gratification he had himself experienced when, supported by the Council, he obtained from his Grace the Duke of Newcastle, Her Majesty's Secretary of State for the Colonies, a grant of one-half of the ways and means, without

which this great addition to our acquaintance with the shores and interior of North-Western Australia could not have been brought about.

Sir Roderick then expressed his regret that in consequence of the anniversary having occurred during the Whitsuntide recess, his Grace the Duke of Newcastle, and both the Under-Secretaries of State for the Colonies, were out of town, and therefore unable to attend that day to receive the Founder's Medal, which, however, he would transmit to Mr. Chichester Fortescue, M.P., who had taken a very active and friendly part in supporting the project of Mr. Frank Gregory, as recommended by the Royal Geographical Society, and who therefore, together with his chief the Duke of Newcastle, deserved the best thanks and acknowledgments of the Society.

Having handed the Founder's Medal to the Secretary, Mr. W. Spottiswoode,

The President then said that he never had been more gratified than when the Council adjudicated the Patron's Medal to his old and valued friend, Mr. John Arrowsmith, who would unquestionably have received the honour long ere this had he not himself, by his continual advocacy of the claims of distant travellers and surveyors of our colonies, rendered unavailing our endeavours to confer upon him a distinction so well merited. The perspicuity and fidelity with which Mr. John Arrowsmith had laboured for many years in analysing and comparing the often crude and hastily-constructed sketch maps which travellers brought home from distant lands, and the pains he took, irrespective of any pecuniary profit, to delineate such fresh knowledge on his maps, have justly rendered his name famous among practical geographers. "Let us say," added the President, "that there is a peculiar fitness in seizing the present opportunity of presenting the Patron's Medal to Mr. Arrowsmith, inasmuch as in consequence of the number of years he has served on the Council, he retires, for a year only I hope, from his seat at our board, and as his modesty has prevented him from attending to-day, I feel fully justified in saying that every one in this assembly rejoices with the Council and myself in seeing this recompense bestowed on so eminent and practical a geographer as John Arrowsmith."

Reverting to the consideration of the explorers of Australia, the President then said that in his Address he would dwell so emphatically on the value of the explorations of McDouall Stuart,

Landsborough, M'Kinlay, and Walker, that it was unnecessary he should now advert to their great merits.

The first-named gentleman had already received the highest honour the Royal Geographical Society had it in its power to bestow, not merely on account of his adventurous expeditions across the interior of Australia, but also because he had made accurate and therefore most valuable geographical determinations of latitude and longitude.

To Messrs. Landsborough, M'Kinlay, and Walker, the Council presented gold watches, with suitable inscriptions.

The President then addressed Mr. Landsborough in highly complimentary language, the purport of which is to be found in the Address, and that gentleman made an appropriate reply.

The watch of Mr. M'Kinlay was delivered to his companion, Mr. Thomas Middleton, who, as well as Mr. Landsborough, gave a graphic account of some of the peculiar characteristics of the countries traversed, and the difficulties they had to surmount.

The watch voted to Mr. Walker was confided to the care of the Secretary, for transmission to that gentleman.

ADDRESS

TO THE

ROYAL GEOGRAPHICAL SOCIETY.

Delivered at the Anniversary Meeting on the 25th May, 1863,

By Sir Roderick Impey Murchison, K.C.B.,

PRESIDENT.

Gentlemen,

In this, the Ninth Anniversary Address which I have had the privilege of delivering to the Fellows of the Royal Geographical Society, I must claim your indulgence yet more than on previous occasions, inasmuch as, besides the enlargement of our subjects of inquiry, my numerous other public avocations have prevented my devoting sufficient time to the preparation of the matter to which I have now to call your attention.

Like the noble Lord, my immediate predecessor, however, I am happily able to begin with hearty congratulations on the continuous rise in the prosperity of the Society, and the great increase of our members; albeit that the hand of death has stricken too many of our associates, and among them men of distinguished eminence.

In the Obituary, with which our Addresses always commence, I will dwell only on the character of those of our Members who were either known as geographers, or distinguished in public life, science, letters, and the arts: yet, even when so restricted, the list, I regret to say, is sad and long.

OBITUARY.

Whilst no practical or scientific British geographer of note has been taken from among ourselves since the last anniversary, we have to

condole with our allies the French on the loss of a man who, during a long life, has greatly and steadily advanced our science, and who was justly elected in our earliest days a Foreign Member of our Society. M. JOMARD, a native of Paris, was born in 1777, and at the period of his death had therefore reached the great age of eighty-five years. By pursuing in his youth those studies in physical science in which our sister country is so distinguished, he laid the foundation of that eminence which he subsequently attained. When but twenty-one years of age, he was chosen one of the corps of *savans* who accompanied General Bonaparte to Egypt; and hence it was that, in the last year of his life, he and my lamented friend the late eminent geologist Baron Cordier, who died in the same year, were the only two remaining members of that very remarkable group of men of science. Just as Jomard was vigorously occupied up to the last days of his life in promoting geography, so Baron Cordier, when aged eighty-four years, explored a large portion of the Alps on foot, and returned to Paris to resume his last lectures at the Jardin des Plantes, which he delivered with his accustomed vigour. Honour to the great soldier, who, at a moment when his countrymen had hardly emerged from the shock of a mighty Revolution, insisted on being accompanied to the classic soil of Egypt by such a scientific body-guard! For, although that expedition ended in a military disaster for France, yet, by her illustrations of the famous days of the history of Egypt, she acquired a reputation which will survive many of the glories of her warlike deeds in arms.*

To proceed, however, with the sketch of the life of the young savant who returned from the campaign in Egypt. Having by great perseverance succeeded, after years of labour, in preparing for publication the great work of his associates and himself, entitled 'Description de l'Egypte,' M. Jomard visited England after the peace in the year 1814; and, through the influence of Sir Joseph Banks and others, he obtained permission to take casts of those

* I may here say, that, notwithstanding this great example set us by the French, England totally neglected the opportunity recently offered to her in the war of the Crimea, in not attaching any men of science to the British army. In fact, when the army was leaving our shores in 1854, an earnest appeal which was made on the part of the scientific Societies of London, in which I took an active part, was rejected. It thus came to pass, that, after all its marches in Bulgaria, and long campaign in the Crimea, few or no real additions were made to our acquaintance with the physical geography, geology, or natural history of those countries. The want of a consulting geologist was indeed sorely felt at the siege of Sebastopol, when the necessity of sinking artesian wells for potable water became imminent; and then I was uselessly consulted on the subject.

great Egyptian works of art which he had admired when he thought they were destined for his own Louvre, but which the fortune of war had brought to our British Museum. Acquiring an insight whilst among us into the new system of education, that of mutual instruction, we next find him giving his first lecture at Paris on elementary education, on the very day of the battle of Waterloo! In 1818, in recompense for his antiquarian researches, he was elected a member of the Academy of Inscriptions and Belles Lettres. Successively, indeed, he became a member of nearly all the scientific Academies and Societies of Europe; but in this place and on this occasion our chief ground for honouring the memory of M. Jomard is, that, having earnestly contributed to found the Geographical Society of Paris, he was during forty-one years one of its most active and zealous members, and often acted as President or Vice-President of that body. His memory has truly another special claim upon our acknowledgments, inasmuch as he was the organizer and administrator of a new department in the National Library of France for the collection and arrangement of the maps of all nations,—a situation for which his acquaintance with many languages, and his active correspondence with geographers of other countries, singularly well fitted him.

In addition to his numerous writings on Egypt, M. Jomard has largely augmented our acquaintance with the geography of Africa by his liberal encouragement of travellers. One of the most striking proofs of this leading feature in his character was the warm manner in which he took up the cause of the poor traveller Réné Caillaud, and his efficient superintendence of the publication of a work which established the truthfulness of the journey to Timbuctoo of that poor, half-educated, yet enterprising Frenchman, who had been unjustly stigmatized as an impostor.

Rivalling the eminent Portuguese geographer, the Vicomte de Santarem, in the collection of maps and records from the earliest periods, M. Jomard brought out, entirely at his own cost, amidst various other important documents, the Map of the World by Juan de las Casas, the pilot of Columbus. During the last twelve years of his indefatigable labours, we learn from his gifted biographer M. de la Roquette, that he prepared a memoir, adopting the theory that Arabia had been the source whence the population of Egypt had been derived. Besides taking a lively interest in the construction of the canal of Suez, in the formation of the Acclimatisa-

tion Society of Paris, and in archæological researches, it is well known that, when arrested by death, he was, even at his great age, preparing a new edition of his collection of Maps, with a general Introduction.

When we look to M. Jomard's contributions to the great work, 'Description de l'Egypte,' which were thirty in number, to his notices in the 'Comptes Rendus' of the Institute, and in the 'Journal des Savans,' with his numerous writings in the Journal of the French Geographical Society, as well as to his communications to ourselves, we cannot fail to admire the untiring energy of our honoured Foreign Member. Of this venerable man I can truly say with his associate, biographer, and eminent colleague, M. de la Roquette, that his hospitable house was equally open to foreigners as to Frenchmen, and that he gave to all such a kind reception, that, whether we view him as the enlightened commentator on, and analyst of, all geographical labour, the energetic promoter of our science, or the warm and kind friend of all his associates, M. Jomard will ever be remembered as one of the true benefactors of this age.*

The late Viceroy of Egypt, SAID PASHA, had been so kind a friend to all English travellers, that when His Highness recently visited our metropolis we did honour to ourselves in electing him a Fellow of the Society. In thanking His Highness for his good will towards my countrymen, I expressed a hope that he might be able to aid Captains Speke and Grant in their efforts to discover the sources of the Nile, adding that I feared the difficulties they would have to encounter were in regions beyond his territories. "Still (replied the Pasha), I shall have it in my power to help them; for be assured that my frontiers are very elastic."

We have lost another of our Foreign Members in Dr. HAMEL, a member of the Imperial Academy of Sciences of St. Petersburg. Dr. Hamel was a man, of knowledge, ability, and great perseverance, who had travelled much, observed keenly, and was well known to men of science in most parts of Europe and America.

The Marquis of LANSDOWNE.—Of our own countrymen and Fellows of the Society who have died in the past year, I will first speak of that venerable and illustrious nobleman, the Marquis

* For a full account of M. Jomard's writings and proceedings, see the excellent sketch of him by his friend, M. de la Roquette. (Bulletin de la Société de Géographie, tome v., Février, 1863, p. 81. With a portrait.)

of Lansdowne. The demise of this venerable statesman, in the eighty-third year of his age, has justly called forth from men of all classes and of all pursuits the expression of their admiration of his enlightened, patriotic, and noble character. It is not for the President of this Society to attempt to pronounce an eulogy worthy of such a man; for that has been well done by the leading statesmen in both Houses of Parliament, whilst every section of the daily press * has vied with its fellows in bearing testimony to the truly honourable and distinguished career of the Marquis of Lansdowne.

Men of letters and the cultivators of the Fine Arts have had, indeed, to deplore the loss of one who was not only their kind and considerate patron, but who was also the accomplished judge of the merits of their works. Let us, then, as followers of a branch of science which is closely allied to historical research and literature, put in our claims to say a few words in praise of a scholar who was a lover of comparative geography, and who took as lively an interest in the well-being of our Society as if he had been one of our labouring associates.

In truth, Lord Lansdowne was endowed with so capacious a mind and such broad sympathies, that he always showed the strongest desire to extend every branch of human knowledge; and seeing before me, on this occasion, various explorers of distant lands, let me say that no mansion in our metropolis was ever more freely thrown open to any distant traveller than Lansdowne House. Nor can any such traveller ever forget the urbanity with which he was received, and the tact and happy discrimination which the noble host displayed in eliciting the knowledge of his guest.

On my own part I can testify, that when (in 1840) I first went out to explore Russia and the Ural Mountains, and compare their distant rocks with those ancient formations of my own country, the order and relations of which I had elaborated, it was Lord Lansdowne who procured for me, through the Russian Ambassador, Baron de Brunnow, those credentials, without which my labours would have been in vain. This was indeed but one of the many proofs he gave me of his kindness and regard. Consistent as a Liberal in every sense of the word, and a warm supporter of his political friends, Lord Lansdowne never neglected an opportunity of doing a service to persons of merit who were of opposite politics;

* See particularly 'The Times.'

and it was in thus giving proofs of a general spirit of benevolence that he became universally beloved and respected.

As a Trustee of the British Museum, Lord Lansdowne was for many years eminently useful in the Department of Antiquities; and his advice was always sought when a union of learning with a true feeling for ancient art was required. Nor can I forget that, when all his friends in the present Government had, as his co-Trustees, come to the conclusion that it was expedient to break up the British Museum by severing from it its Natural History contents, Lord Lansdowne then, in the last year of his valuable life, qualified his unwilling assent in a letter, expressing his regret that an adequate expenditure could not have been obtained to keep united those memorials of Art, Letters, and Science in the one great and unrivalled national repository which he had so long admired.

Lastly, as a Scotsman, I have some right to be proud when I remind you that the deceased Marquis, as well as the living Premier and the Secretary for Foreign Affairs, received an essential part of his education in the University of Edinburgh; and it must, indeed, be pleasing to all my countrymen of the north to reflect that the names of Dugald Stewart and John Playfair will go down to posterity as the instructors of a Lansdowne, a Palmerston, and a Russell.

The Right Honourable Sir George Cornewall LEWIS, Bart., M.P.—I have next to record the premature decease of my eminent friend, Sir George C. Lewis, in the fifty-eighth year of his age. Receiving his elementary education at Eton, George Cornewall Lewis took the highest classical honours at Oxford. Afterwards, and under the guidance of his accomplished father,* with whom I was long on terms of intimacy, he laid in those stores of ancient lore which in subsequent years, and when the public only knew him as a statesman, enabled him to compose abstruse works, the production of which, with ordinary men, would have been incompatible with onerous official duties. The great amount of knowledge which he had accumulated was, in truth, the result of those years of hard and patient research which preceded his being called into public life. It was this solid training which enabled him to write so many learned works, that it has been justly said of him that "he did as much in his life as twenty ordinary men, and did it well." †

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* The Right Hon. Sir T. Frankland Lewis, Bart.

† 'The Times.'

Sir George's associates in the House of Commons and in the Cabinet in which he sat, having all testified their deep sense of the loss the country has sustained in his death, it would be superfluous in the President of this Society to enlarge on the topics by which he characterised his public career, and for which he will ever be remembered by the nation; but, as one who was proud of his friendship, I must be allowed to record my personal obligations to him.

In the year 1833, or two years only after he had been called to the bar, and before he had himself published any work, young George Lewis, then residing with his excellent father at Harpton, was so much struck with the geological observations I had made in his own county of Radnor, and in the adjacent Welsh and English counties, that he urged me to gather together and condense my materials in one large work. In a subsequent year, and after I had classified and shown the order of those ancient rocks in the old British kingdom of the Silures, under the name of "Silurian," he again urged me to write a distinct work by putting together all my detached memoirs; and thus it was that, in 1835, I announced the "Silurian System" of rocks, the large work which I completed, after seven years' labour, in 1838. I need not say that this sound advice of the thoughtful young George Lewis was of inestimable value to his older friend, and has ever since been gratefully remembered.

Whoever has had the privilege of being an inmate of the house at Harpton, whether in the lifetime of that most agreeable and enlightened man, Sir Thomas Frankland Lewis, or afterwards during the happy union of our deceased Fellow with the charming and gifted lady who mourns his loss, must have been struck with the perfect cordiality and harmony in which father and son, husband and wife, lived together; leaving in the minds of all their visitors in the vale of Radnor a souvenir never to be forgotten.

In whatever aspect we view the late Sir George Cornewall Lewis, whether as the statesman around whom as a nucleus men of all parties might have rallied in a future day; as a scholar "who might have done honour as a Professor of Greek to the most learned University in Europe;"* as a son, a husband, or a friend;—all those who knew him must agree with me when I affirm, that he was as faultless a type of humanity as any man of this generation—one of

* See Dean Milman's Preface to his 3rd edition of the 'History of the Jews.'

whom it has been justly said by a great orator of the House of Commons *—

"Justissimus unus,
Qui fuit in Teucris, et servantissimus æqui."

Sir Benjamin BRODIE, Bart.—This remarkable man, for whom, in common with every one who knew him, I had the sincerest regard, was not taken from us until he had attained the highest distinction to which any man of science can aspire. Rising steadily in his profession by the exercise of a judgment at once quick, acute, and sagacious, combined with a happy operative dexterity, he became and long continued the leading surgeon of this metropolis. But, in pursuing his profession, Brodie never for a moment neglected the cultivation of other and higher branches of knowledge; and even at an early age he was admitted into the Royal Society, and contributed in that capacity several excellent memoirs on physiological subjects. He thus attracted the attention of Sir Joseph Banks, then the President of that body, obtained a high reputation as a physiologist, and with it the Copley medal.

Though for many years absorbed in active anatomical and surgical pursuits, he ever strove to advance the collateral sciences of Natural History and Chemistry; and, while he acted as President of the College of Surgeons, he was ever anxiously at work in promoting the completion of that grand and noble Museum, founded by his illustrious predecessor, John Hunter.

As he gradually withdrew from his active professional career, Sir Benjamin naturally went back to his early scientific love, and thereon his numerous friends and admirers fixed upon him as one who, by his attainments as well as by his honourable character, was eminently entitled to occupy the chair of the Royal Society. In that capacity he gave universal satisfaction by his courteous demeanour, while he had a pleasure in restoring to the Society a portion of the character it had when he entered it. In the days of Banks and Davy, men of any importance in public life, or of any considerable stake in the country, who though not scientifically qualified were yet lovers and supporters of science, were frequently admitted as Fellows. This system having been somewhat abused, and persons with no claims to distinction having been admitted by ordinary ballot, a great reform was called for; and it was decided that fifteen only of the most distinguished men among the numerous candidates were

* See Mr. Gladstone's Speech, May 4th, 1863.

thereafter to be annually selected by the Council. Although the working of this rule has been on the whole excellent, the good sense and right feeling of Brodie led him to the conviction that the plan was rather too exclusive; and hence he suggested the introduction from time to time of men of public distinction or utility, in addition to the exclusive selection of scientific workmen and authors.

As a Trustee of the British Museum, his sound advice was valuable on all occasions; and I had good reason for admiring the heartiness and independence of spirit with which he signed and afterwards personally supported an appeal to the Government, which I had drawn up, praying that the old British Museum might not be dislocated, and its Natural History contents translated to Kensington.

It is not to be forgotten that this eminent and good man served as a Vice-President and as one of the Council of our Society; for, amidst all his busy occupations, Sir Benjamin Brodie found time to cultivate and take much interest in geographical researches, and particularly in that branch of it which connects us with Ethnology. In every relation of life he was a model to be admired and imitated; and he so happily educated his son, that the present Baronet is now one of the leading scientific men of the day, and Professor of Chemistry in the University of Oxford.

The Marquis of BREADALBANE, K.T.—By the demise of the Marquis of Breadalbane I have lost a kind and valued friend, who, though he made no pretensions to science, delighted in associating himself with its cultivators. He was well versed in mineralogy, and earned the praise of naturalists by acclimatising the animals of other countries in his beautiful grounds at Taymouth, including the Llama of South America and the Bison of the American Prairies. To him also we owe the re-introduction into the Highlands of the Capercailzie, or Great Cock of the Woods.

In every sense of the word, Lord Breadalbane was a great nobleman; and whatever he resolved to do he did it thoroughly, and, if occasion required, magnificently. Having for many years served the Queen as Lord Chamberlain, he was as highly esteemed by Her Majesty and her illustrious Consort, as he was beloved by his friends for his fine social qualities; whilst his munificent Highland hospitality, whether at Taymouth, at the Black Mount, or on the Queen's birthday in London, will be long remembered by foreigners, as well as by our countrymen.

In 1840 he presided over the Meeting of the British Association

at Glasgow; and, as I then acted under him as a General Secretary, I am enabled to testify, that, under his leadership, the men of science were most effectually supported by the nobility, gentry, and all classes of the inhabitants of Scotland.

Honest, patriotic, straightforward, and highminded in his public career, he was very sincere in his private attachments. He was, indeed, so deeply affected by the loss of his accomplished wife in 1861, that from that moment he lost, and never recovered, his wonted elasticity of spirit. He died at Lausanne, in the 67th year of his age.

The Earl of GIFFORD, though not professing to be a geographer, was greatly distinguished by distant travel. Wandering far into the higher recesses of the Himalaya Mountains, and through tracts which are seldom explored by Englishmen, he underwent great suffering from intense cold. Among his contributions to Natural History, it is to be remembered, that, being an ardent sportsman and a good shot, he killed in these mountains the Kiang, one of the very rare wild asses (*Equus Kiang*, or *Asinus Hemionus*, Gray), an animal not previously seen by our naturalists, and the skull and skin of which are now in the British Museum,* while a living specimen is to be seen in the Gardens of the Zoological Society.

As a member of the House of Commons, Lord Gifford was of great use in the Dockyard Commission, the masterly Report of which was written by him, and has often been referred to in Parliament, as displaying equal ability and integrity. One of his special studies, indeed, was that of Finance; and I learn from his accomplished and devoted widow, that he left behind him an unfinished financial work, to the completion and publication of which she had looked forward with sanguine hope and pride, as

* It is also to be noted that Lord Gifford's brother, Lord William Hay, after a residence of fourteen years in the region of the Himalaya, is the person who conveyed to us the first correct intelligence concerning the fate of the traveller Adolph Schlagintweit. He also made (with the assistance of Capt. Clarke, Bengal Cavalry) the most striking photographs of many lovely scenes around Simla, including Lord Dalhousie's famous mountain-road to Thibet, as well as views of the snowy peaks of Ladak, the gorges of the Sutlej, the Valley of Kashmere, &c. The characteristic foliage of the forests of Deodora and each group of native trees, the striking and bold features of the rocks, and even the climatal conditions of warm rains and snow-clad peaks, the form of buildings, and habits of the people, are all so well brought out, that geologists, botanists, architects and engineers must unite with geographers in admiring these scenes of nature and art. It is a remarkable circumstance that four sons of the Marquis of Tweeddale should have traversed the Himalaya to the plains of Thibet, viz., the late Lord Gifford; Lord Arthur (now Lord Walden), who brought home many new species of birds; Lord William, as above; and Lord Frederick, who killed many of the wild horses mentioned in the text.

calculated to make his talents known to the world in the most useful and worthy form.

Lord Gifford was not only a good mechanic, he was also a sound mathematician and a scientific musician, having written a treatise on Counterpoint at the age of twenty. His appreciation of the Fine Arts was intense; and he had such a facility for modelling, that, if born in a humble walk of life, and not as heir to a marquisate, he unquestionably would have been eminent as a sculptor.

Dexterous in every manly exercise, he lost his life through his energy in sustaining a heavy mass of wood, from which some workmen whom he was directing had loosened their grasp, thus suddenly throwing a vast weight upon him. The inflammation occasioned by this accident led to an illness of sixteen months' duration, of which he died on the 22nd of December last, in the fortieth year of his age.

All the friends of Lord Gifford (and I am proud to have been of that number) know well, that an ingenuous simplicity was combined in him with the clearest intellect and the kindliest disposition; whilst, in addressing geographers, I can assert, that the explorers of difficult and inaccessible regions have, by his death, lost a distinguished rival.

The Earl of Ellesmere.—Six years, alas! only have elapsed since it was my painful duty to recount to this Society * the merits of my gifted friend, one of our former Presidents, the first Earl of Ellesmere. His successor, the young Earl, who has since passed away, was so infirm in health when he succeeded to his title, that a long life could scarcely be hoped for him. Though little known in public life, I am bound, however, to say of him, that he was a good scholar, a sound mathematician, and that he felt real pleasure in taking his place in the Royal Society, as well as in our own body. He also proved himself to be a son worthy of his accomplished parent as the patron of the Fine Arts, and as a great landed proprietor he sought to promote the good of all around him.

Lucas Barrett.—Geography is too intimately linked on to Geology to allow me to pass over the name of young Lucas Barrett, who, though cut off at a very early age, had already risen to distinction, and was Director of the Geological Survey of the West Indies. A pupil of Professor Sedgwick, he earned the full approbation of that eminent man by his skill as a palæontologist, and the

* See Obituary in Vol. xxviii.

able manner in which he classified and arranged the Woodwardian Museum at Cambridge. Having published several papers showing great acumen, he was, on the retirement of Mr. Wall, appointed Director of the West Indian Geological Survey. In that situation he displayed both vigour and ability, and, by his acquaintance with fossil remains, was enabled to show that the copper ores of Jamaica occurred in rocks no older than the chalk of Europe—a fact previously unknown. The Geological Map and Sections of Jamaica, which he exhibited at the late International Exhibition, and which his associate, Mr. Sawkins, and himself had prepared, were honoured with a medal. On returning to his post in Jamaica, he took with him a new diving apparatus to dredge for marine animals, and, through some maladjustment of the safety cord, he unfortunately perished when making his first trial; leaving a widow to lament the untimely end of this highly-gifted and promising young man of science.

Mr. James Robert GOWEN, who died since our last anniversary, was an intelligent Fellow of our Society. In addition to his fine temper and amiable social qualities, he had the merit of being the first of our body who recommended the employment of camels in the exploration of Australia; and, as was shown in the article on Australia in the President's Address of last year, it was by such means that the northern sea was first reached from South Australia and Victoria.

Mr. William John BURCHELL.—By the death of Mr. Burchell we have lost a venerated representative of the early race of South African travellers, as it is forty years since he undertook extended journeys into the Hottentot districts north of the Cape. He was an assiduous collector and a careful observer; and his narrative may be ranked among the classics of English travels, from its simple, vigorous, and truthful style, and its numerous illustrations, made with scrupulous fidelity on wood and stone, by his own hands.

By the decease of Mr. CHAMBERS, of Adelaide, the promotion of Australian surveys has suffered a great loss. Though not a man of science himself, he was the patron and employer of M'Douall Stuart. And if it be suggested that such an employment of our Medallist was chiefly caused by a desire to acquire new lands, may I not reply that it is by such bold and riskful methods of spending their capital—a boldness which is peculiarly characteristic of the Anglo-Saxon race—that Geography owes many a bright discovery and Commerce many a useful end? In his employment and fitting out of Stuart, and

from the manner in which he transmitted all information to this our Geographical Society, Mr. Chambers has shown much liberality, as well as his surviving partner, Mr. Finke.

Mr. Edmund GABRIEL.—All those who take an interest in the suppression of the slave-trade will hear with regret of the death of Mr. Gabriel, Her Majesty's Judge in the Mixed Commission Court at St. Paul de Loanda, West Coast of Africa. Mr. Gabriel had been connected with that coast for many years, and was perhaps as instrumental as any man of his time in putting down the nefarious traffic. The son of a naval officer, Mr. Gabriel entered his father's profession at an early age, and served for seven years in the African squadron, twice filling the position of Secretary to the Commander-in-Chief on the station. In this capacity he acquired a perfect knowledge of the slave-trade in all its bearings. Early in 1845, his distinguished talents and zeal brought him under the notice of the late Earl of Aberdeen, then Foreign Minister, who selected him to fill, at the early age of twenty-one, the important post of Arbitrator and Acting Judge at Loanda. His energetic administration of this office was appreciated by the Liverpool merchants, who tendered for his acceptance a costly piece of plate, as an acknowledgment of his efforts for the protection of British shipping; but Mr. Gabriel, with his characteristic high-mindedness and delicacy, declined the valuable gift, remarking that he had only done his duty, and that it was not consistent with the office of a Judge to accept a present. Another very characteristic circumstance is recorded of him in Dr. Livingstone's well-known volume. When that great explorer, having crossed the African continent, reached Loanda in May, 1854, worn out by fatigue and sickness, he presented himself without introduction at the hospitable door of Mr. Gabriel, who immediately gave up his own bed to the sick and unknown stranger. Dr. Livingstone bears grateful testimony to the generous kindness of this "genuine, whole-hearted Englishman," in whose house he and his twenty Makololos found a home for many months.

In urging on the House of Lords (1861) the desirableness of reappointing a Consul at Mozambique, with a view to the suppression of the slave-trade on the east coast of Africa, Lord Campbell passed a well-merited eulogy on the character of our deceased associate, Mr. Gabriel, pointing him out as the man of all others most capable of checking the slave-trade in that foreign colony. It was on that occasion said of him, with justice, in reference to his career at Loando, that, "during a period of fifteen years, the volumes on

the slave-trade abound with proofs of his tact, judgment, public spirit, and intelligence."

We have only to add that Mr. Gabriel eventually fell a victim to the deadly influences of the climate, operating on a constitution impaired by the hard work of seventeen years. He died on board H.M.S. *Torch*, having gone afloat in the hope of recovering his health. After his death the vessel returned to Loanda, where his remains received the honours of a public funeral; the Viceroy, and other foreign authorities, with the inhabitants of the place, joining with his own countrymen in this mark of regard, the universal sentiment being one of deep sorrow for his early death.

Among the other Fellows of the Society who have passed away, I must mention, as personal friends whose loss I lament, Mr. James Walker, F.R.S., the eminent and well known Civil Engineer, whose valuable labours will be recorded in the proceedings of other societies; Mr. Antony St. Leger, an accomplished and most agreeable gentleman; and the amiable Mr. Walter Ewer, a skilful Orientalist and civil functionary of our Indian Administration.

The remainder of the mournful list is made up of the names of Mr. David Barclay; Mr. George Smith Brent; Mr. John Costerton; Major-General John Fraser; Lieutenant-Colonel C. Fagan; Mr. George March Harrison; Mr. W. Jackson; Mr. Charles Hammersley; Mr. E. B. Lawrence; Captain Liardet, R.N.; Mr. H. Tanner, of Philadelphia; Mr. Francis Nares; Vice-Admiral A. Vidal (a distinguished officer); and the coloured Missionary, Mr. Hanson. The last-mentioned of these addressed us on African subjects in relation to the slave-trade and the new settlement at Liberia, with much feeling, and in good and racy English.

Mr. WHEELER, our first clerk, who died recently, was a great loss to the Society, and many of our Members have very properly subscribed to assist his widow and young children.

The different subjects of the Address which follow will be given in much the same order as in previous years. Beginning with the Admiralty Surveys, as furnished by our esteemed associate Admiral Washington, the Hydrographer, and succeeded by the national Topographical and Geological Surveys, the account of the progress of exploration in Africa and Australia will form the main features of this discourse. Brief sketches of the progress of Geography in

Germany, more particularly as gathered from the publications in the 'Mittheilungen' of Petermann, will be followed by observations on the present and former conditions of the northern regions of Europe, to show the intimate connexion between geological and geographical science.

Commenting very briefly on a few publications of books and maps in our own country, analyses of the progress of researches in Asia, Australia, and Africa will then be given, deferring to the ensuing Anniversary any observations on the advance of our science in Russia and America. On this occasion I will conclude with a few observations on the changes which have just taken place in the administration of our affairs.

Admiralty Surveys.

The Coast Surveys in course of execution under the orders of the Admiralty, both at home and abroad, have made the usual progress during the past year. They are conducted by twenty different parties: one-half of which are employed in the United Kingdom; the remainder in the colonies of Australia, Cape of Good Hope, West Indies, Nova Scotia, Newfoundland, and Vancouver, and also on the foreign coasts of Syria, Saloniki, China, and Japan.

The British Isles. England.—The Coast Survey of the British Isles is nearly complete; but from the nature of the shores, particularly on the east coast of England, in the estuaries of the Humber and Thames, in Yarmouth Roads, the Downs, and other places subject to the accumulation of sands, changes will ever be taking place that will require watching and re-examination.

The South Devon Survey has been brought to a close, under Capt. Stokes, R.N.; and the re-examination of the Scilly Isles, by Capt. Williams, R.N., and of the Channel Islands, by Mr. Richards, R.N., is proceeding steadily. In the latter group, so beset with rocks and hidden dangers, a very critical search is required; and the careful system carried out by Mr. Richards has been rewarded by the detection of several shoals that had escaped the cursory method of previous surveys.

In South Wales, Commander Aldridge and staff have surveyed 40 miles of coast-line, besides 20 miles of sward or marsh outline, together with about 100 miles of low-water feature, and 108 square miles of soundings.

Mr. Calver, R.N., and party have finished the upper Humber, and re-surveyed a considerable portion (120 square miles) of the southern

entrance of the Thames. They were also engaged in making a series of observations on the tidal streams off Dover, with a view to assist the solution of the much-contested problem of the locality of Julius Cæsar's landing on our shores.

Mr. Scott Taylor, R.N., has continued his delineation of the several changes in progress in the vicinity of Portsmouth and the Isle of Wight.

Scotland.—Captain Otter and his assistants have been engaged in the survey of the islands of South Uist, Canna, and Rum, and have sounded over an area of 1182 square miles. Commander Thomas has continued his survey of the intricate shores of Benbecula and Harris, of which he has delineated 113 miles of the labyrinthine shores occupying a comparatively small area, and has sounded 246 linear miles in boats; while Commander A. G. Edye has surveyed 62 miles of the exposed islands of Barra, Muldoanich, Flodday, Pabbay, &c., as also the dangerous submerged rocks adjacent.

Commander (now Captain) E. J. Bedford and staff have surveyed 97 miles of the coast line of Lochs Linnhe, Leven, Etive, and Iel, and 107 square miles of adjacent topography, together with 194 linear miles of soundings.

Ireland.—Messrs. Hoskyn and Davis, R.N., were employed during a portion of the season in obtaining deep-sea soundings off the Western coast in H.M.S. *Porcupine*, for the purpose of determining the best route for the electric cable to America, should that gigantic and much-to-be-desired enterprise be again attempted; and which the indomitable energy and perseverance of English and American capitalists and engineers will doubtless undertake and accomplish; either by the direct route from Ireland to America, or by the more circuitous connexion of Færöe, Iceland, Greenland, and Labrador. This examination of the bed of the Atlantic to a distance of about 200 miles from the coast, has revealed some remarkable irregularities of contour; and among them is that of the Porcupine Bank, having a depth of only 82 fathoms at a distance of 130 miles west of Slyne Head. A line of soundings was also carried to the extensive and prolific, but, as appears from recent accounts, very uncertain fishing-bank, from which rises the remarkable and almost inaccessible lump of granitic gneiss, "Rockall," to a height of 70 feet above the level of the sea, where its base is only about 250 feet in circumference. (Lat.: 57° 35′ 53″ N., 13° 42′ 21″ W.) Mr. Hoskyn's survey has added some interesting facts in microscopic life, and also some species of shells and other animals new to British Fauna.

Mediterranean.—Captain Spratt, R.N., with his staff, in the *Medina*, have during the past year completed an admirable survey of the Maltese Islands, with their surrounding depths. This has been charted on a scale of 1½ inch to a nautic mile, and is already in the engraver's hands. They have also delineated the shores of the Gulf of Saloniki, and obtained lines of deep-sea soundings through the Archipelago. Elaborate surveys have also been made of French Creek, and portions of Grand Harbour, Malta, on a scale of 60 inches to the mile, for engineering and other special purposes.

Commander Mansell and his staff, in the *Firefly*, have completed the coast of Syria, forming a junction at El Arish with his previous survey of the coast of Egypt. An extensive triangulation has been carried across the mountain ranges, by which the connexion of Damascus, and the chief points of interest along the valley of the Jordan, with the shores of the Mediterranean have now been accurately established. Commander Mansell has now commenced the re-examination of the channels of Corfu, which is much required.

Africa.—In the Cape Colony Mr. Francis Skead, R.N., has made a survey of Mossel Bay and adjacent coast, on a scale of 4 inches to a nautical mile, and has extended his triangulation for future observations.

Asia.—Along the Mekran coast of Persia, Lieut. A. W. Chitty, I.N., has closely sounded between Ras Jáshk and Ras Gwadel to distances varying from 10 to 20 miles from the shore, where the depths are from 200 to 400 fathoms.

Lieut. Stiffe, I.N., also obtained some additional soundings in the Persian Gulf, and examined various portions of the coast to determine the best stations for the telegraph-line which is to connect this country with our Indian empire, by route of Constantinople, Bagdad, and the Persian Gulf.

A plan of Bushire, by Commander C. G. Constable and Lieut. A. W. Stiffe, I.N., has recently been published by the Admiralty, on a scale of 3 inches to the mile.

China and Japan.—In the course of the preceding year H.M. ships *Rifleman* and *Swallow* left England for the survey of the China and Japan Seas. Mr. John W. Reed, Master, R.N. (commanding the *Rifleman*), and his staff, have already transmitted a good instalment of work, in the surveys of the Tambelan and St. Esprit groups, and the surrounding islets and rocks lying between Singapore Straits and Borneo. Meridian distances have been run between these islands, Singapore, Saigon River, and Pulo Condore; Charlotte

Bank examined and its position accurately determined; while the reported shoal Capiolani, lying (as well as Charlotte Bank) directly in the route between Singapore and Hong-kong, was sought for in vain. From evidence obtained relative to this supposed danger, it seems more than probable that the captain of the *Capiolani* was deceived in what he saw. The next work of the *Rifleman* will be the survey of Pulo Sapato, Catwick, and the several dangers lying to the south-east of Cochin China, in the high road of commerce, and from thence proceed to explore and define the numerous reefs that stud the China Sea between those and the coasts of Borneo and Palawan, one-half of which, as they appear on charts, are probably fabulous, so that the importance of establishing the really existing ones in this much-frequented route cannot be overestimated.

Mr. Edward Wilds, Master, commanding the *Swallow*, with his staff, have carried meridian distances to Singapore, to Pulo Condore, Sapato, Hong-kong, and Shang-hai, and resurveyed the shallows of Wu-sung River, leading to the last-named place. The *Swallow* is now engaged in the Japan Sea.

During the season of 1861 H.M. ships *Actæon* and *Dove*, Commander Ward and Lieut. (now Commander) Bullock, R.N., were given the assistance of the *Leven* and *Algerine* gun-vessels, in their surveying operations in Japan, by order of Sir James Hope, K.C.B., the Naval Commander-in-Chief on that station.

The approaches to Yedo, extending from Cape Idzee to Cape King, an extent of 150 miles, and embracing the Bay of Wodewara and the Gulf of Yedo, have been surveyed on a scale of 1 inch to the mile, and a chart of the latter, including the joint work of American, Prussian and Dutch surveyors, has been published on the same scale. The chain of islands, extending about 3° south of the Gulf, has also been partially explored as far as Tatsizio, a large island which is said to be a penal settlement, and inaccessible except at one spot. Additional observations were made on the Kuro-Siwo, or Gulf-stream of Japan, which has been here found to recurve to the southward in the summer months, contrary to the generally received opinion.

At Yedo a manuscript survey of the empire, on a scale of 10 inches to a degree, was obtained from the Government through the instrumentality of Sir Rutherford Alcock, K.C.B., our minister in Japan. This acquisition is valuable not only as a correct map (for wherever tested it has been found to be both trigonometrically and astronomically accurate to a remarkable degree, although graduated

in a peculiar and original manner), but also as a work of art, illustrating the advanced stage attained by this extraordinary people in surveying, which will compare favourably with specimens of our own, published in the beginning of the present century. From this manuscript a new general chart of Japan has been published, on a scale of 2 inches to a degree of longitude, also a chart of the inland sea of Japan, on the scale of the manuscript, with soundings obtained by several of H.M. ships, by which, at the cost of a few days, an intricate labyrinth of rocks and islands is made plain to navigators, which otherwise would have occupied the surveying party a year. The approaches to this sea, embracing about 220 miles of coast-line, have been surveyed by Captain Ward and his staff, on a scale of 1 inch to the mile, and plans of several harbours on the shores of the Eastern or Kü Channel, on the 3-inch scale.

A new survey has also been made of the important harbour of Nagasaki, with that of the adjacent coast as far as Cape Nomo. All of which are in course of publication. The eastern sound of Tsusima and the southern part of the island have also been surveyed; whilst the northern portion of the hitherto unexplored arms of Tsusima Sound have been executed by the Russians, who have also roughly charted the island of Iki.

The depth of the Korea Strait has been ascertained, and the southern part of the Goto Islands surveyed, where a fine harbour, called Tama-no-ura, has been discovered. Also a portion of the Korean Archipelago and coast opposite Tsu-sima, has been explored, by which it is thrown 20 miles to the westward of its assigned place on the chart.

A track survey, by Lieutenant Bullock in the *Dove*, was made of 100 miles of the south coast of the province of Shan-tung in China, from the parallel of 36° 40′ N. to within 60 miles of the old entrance of the Yellow River, which is now reported, with scarcely any doubt, to discharge itself into the Gulf of Pechili by the Ta-tsing-ho, a river known to have been gradually increasing its volume for three or four years. By the destruction of the vast embankments that had confined it to its southern channel, this river has resumed the old course in which it had previously flowed (though with frequent fluctuations) for centuries; thus realizing the prediction of Mons. Biot, made twenty years ago. Off the now dry southern mouth of the Hwang-Ho, its sands were found to stretch seaward 100 miles, rendering it dangerous for large ships to approach the coast even at this great distance.

The question of the geographical distribution of species has been advanced by the valuable collections and observations made by the expert naturalist Arthur Adams, F.L.S., who was Surgeon of the *Actæon*. Mr. James H. Kerr, Master, R.N., with Messrs. Adlam and Dowdale, R.N., were detached from H.M.S. *Actæon* to survey the western branches of Canton River, of which they delineated upwards of 200 miles.

Australia.—The Australian Surveys, at the joint expense of the Admiralty and the Colonies, are progressing steadily; Commander Cox, R.N., and staff have nearly completed that of the noble inlet of Port Phillip, on a scale of 6 inches to a mile, a portion of which is now being engraved on the 1-inch scale.

Commander Hutchinson, R.N., and party have transmitted their survey of the upper inlet of Spencer's Gulf leading to Port Augusta (embracing about 100 miles of coast line), on a scale of 3 inches, with a plan of the port on 9 inches to a mile; a reduction of which will shortly be published; while their chart of the mining district of Wallaroo and Tipara Bays has already been issued.

Commander Sidney, in New South Wales, has transmitted home 50 miles of coast between Crowdy Head and Sugar Loaf Point, and also corrected the chart of Newcastle Harbour to its present condition.

Mr. Jeffery, R.N., who went out at a later period to the survey of the coast of Queensland, is engaged in the survey of the channel within Great Sandy Island.

In Tasmania Lieutenant Brooker, R.N. has made a survey of the Port of Hobart Town, which has been published on a scale of 10 inches to a mile; and also of George's Bay, on the east coast; but we regret to state that his further progress has been cut short in consequence of the finances of the colony being for the time incapable of bearing the moiety of the expense which it had agreed to share with the Admiralty.

Vancouver Island.—Through the indefatigable exertions of Captain G. H. Richards, R.N., and his staff in H.M.S. *Hecate*, the entire survey of this extensive island has now been completed, together with the strait separating it from British Columbia, with most of the inlets that deeply indent the latter. Captain Richards is now returning home, but has organized a party who remain behind to continue the exploration of the coast of British Columbia. A series of eight charts, on the scale of $\frac{1}{2}$ an inch to a mile, will embrace the entire coast of Vancouver; half of which, together with several

enlarged plans of harbours, have already been published. Much credit is due to those who have effected the able and rapid execution of this highly useful survey.

Newfoundland.—The survey of this island, on a scale and system corresponding with the requirements of the present age, is proceeding steadily under Captain John Orlebar, R.N. and staff. The portions of the coast of Trinity Bay lying between Catalina Head and Horse Chops on the west side, and between Baccalieu Island and New Perlican on the east side; also in Conception Bay from Baccalieu to Carbonière, and from Portugal Cove to Cape St. Francis, and thence to Cape Spear, together with Bell and Kelly Islands, have been surveyed on the scale of ½ an inch to the mile, while plans of Catalina, New Perlican, Harbour Grace, and St. John Harbours have been plotted on 3 inches to the mile. On the south coast the Bay of St. Mary, and the harbours within it, have been completed, altogether embracing 370 miles of coast line, added to which upwards of 2000 square miles have been sounded, extending eastward from the coast to the meridian of 50° West. The explorations in Trinity and Conception Bays, and the examination of the sea-bed in their approaches, were made more especially to determine the best point for landing the American end of the Great Atlantic Telegraph, which, it is to be hoped, will ere long connect that country with Great Britain and Europe; and Captain Orlebar has reported that New Perlican, on the eastern side of Trinity Bay, seems to be best adapted for this purpose. For the laying of the first cable you may remember that Bull Bay, in the south-west angle of Trinity Bay, was the place selected for its western terminus.

Nova Scotia and Bay of Fundy.—Captain P. Shortland, R.N., with his staff, have mapped 162 miles of the south-east coast of Nova Scotia, on a scale of 4 inches to a mile, and sounded over an area of 282 square miles. Charts of the upper portion of the Bay of Fundy, embracing the Basin of Mines, and the Petitcondiac River and Cumberland Basin, as also of the south-east coast of Nova Scotia from Baccaro Point to Rugged Island, are about to be issued to the public.

West Indies.—The surveying party under Mr. John Parsons, Master, R.N., have completed about 70 miles of coast line of the Grenadines, St. Lucia and St. Vincent, and elaborately and closely sounded over 180 square miles. Plans of Admiralty Bay, in Bequia Island, and Kingston Bay, in St. Vincent, have been made on a scale of 20 inches to a mile, and of Castries Port in Santa Lucia on

15 inches, and very thickly sounded. Mr. Parsons is now engaged in an elaborate survey of Falmouth Harbour, Antigua, on a scale of 30 inches; this port having been selected as a packet station for the West India line.

Besides the works here described as in progress in the different parts of the world, the labours of the Hydrographic Office during the past year have consisted of the publication of 65 new charts, with material additions and corrections to many others, under the immediate superintendence of Captain George A. Bedford, R.N. It will give some idea of the activity of the business of this office when I state that 138,503 Admiralty Charts have been printed during the year ending 30th April. There have also been published the usual Tide Tables for 2500 places, by J. Burdwood, Esq., R.N., the Light Lists for every coast by Commander E. Dunsterville, R.N., together with Hydrographic notices of new lights, rocks, and shoals discovered, and other information essential to navigation in general.

ORDNANCE SURVEY.—I learn from my friend Colonel Sir Henry James, under whom this important branch of national scientific labour is so efficiently conducted, that the survey of Northumberland and Cumberland has been finished within the last year, and the plans of those counties are now in course of publication. By this operation the survey of England and Wales is nearly completed as relates to the one-inch map of the whole country. The survey of the six northern counties, viz. Northumberland, Cumberland, Westmorland, Durham, Yorkshire, and Lancashire is almost completed, on the twenty-five and six-inch scales. The plans of these counties so useful to proprietors, have been made as *cadastral surveys*,* the universally received name for plans on a large scale strictly accurate in all respects.

The survey of these counties having been on the eve of completion, a Select Committee of the House of Commons, of which Viscount Bury was Chairman, was appointed last session to report upon "the expediency of extending the Cadastral Survey over the southern portions of the United Kingdom that have been surveyed upon the scale of one inch to the mile only;" † and this Committee having reported "That it is desirable that the Cadastral Survey, on

* From the French "cadastre," survey.

† Whilst such are the facts, I must repeat the expression of my hope that these surveys on the large scale will not be applied to the wild and mountainous regions of the Highlands; a one-inch map of which is all that can be desired, whether for proprietors, engineers, or geographers.

the scales directed by the Treasury Minute of the 18th May, 1855, and recommended by the Royal Commission of 1858, and again directed by the Treasury Minute of the 11th September, 1858, be extended to those portions of the United Kingdom which have been surveyed on the scale of one-inch to the mile only." In consequence of this recommendation, a Treasury Minute of the 18th March, 1863, has been issued, directing that arrangements should now be made for carrying this recommendation into effect, and the measure has since received the sanction of Parliament. We shall therefore have a complete cadastral survey of the United Kingdom: that of the whole of Ireland having been already published on the six-inch scale, that of Scotland having been finished from the southern border so far north as to include the whole of Perthshire, parts of Kincardineshire and Argyleshire, and the survey is now proceeding in the two latter counties and in Aberdeenshire. The six northern counties of England have also, as before stated, been surveyed for the twenty-five and six-inch scales; and by the foresight of the late Lord Herbert the military surveys along the valley of the Thames from Kingston to below Sheerness, of large districts round Portsmouth, Devonport, Pembroke, Dover, and other places, were made as parts of a complete cadastral survey of the counties in which those places are situated. In consequence of this arrangement, a great number of the plans are already finished, and the publication of them is now in progress.

A complete catalogue, in three parts, of all the maps, plans, and works published by the Ordnance Survey Department relating to England, Ireland, and Scotland, will be found in the library of the Society; and this catalogue will be reprinted and issued quarterly.

The account of the extension of the triangulation of the United Kingdom through France into Belgium has been published within the last year; the Belgian geometricians are connecting their triangulation with that of Prussia, and the Prussian geometricians are connecting their work with that of Russia, whilst the Russians are extending their surveys as far as Ursk on the river Ural; and M. Otto Struve states that he hopes to have this portion of the work finished next year. We shall then have the data for computing the length of an arc of parallel in latitude 52° N. from Valentia in the west of Ireland to Ursk, extending over nearly 75 degrees of longitude.

In order that the lengths of the computed sides of the triangles in each country and the whole length of the arc should be accurately given in terms of a common unit of measure, a rigorous

comparison must be made between the standard of length used in each country for the measurement of their respective bases, and this comparison is now being made at the Ordnance Survey Office, Southampton. The difference in the computed lengths of the sides in our extended triangulation and the lengths as computed by the Belgian engineers is less than one foot in 10 miles, or less than the $\frac{1}{52800}$ part, but this result may be modified when the standards of length are compared.

The whole of the volume called 'Great Domesday Book' has been copied at the Ordnance Survey Office by the photo-zincographic process applied by Sir Henry James, and the second volume called 'Little Domesday Book,' containing most minute entries respecting the counties of Essex, Norfolk and Suffolk, is now being published; and it is in contemplation to add to these volumes maps of each separate county, showing the position of the several manors mentioned in Domesday Book, with the names by which they were known in the time of the Conqueror and their modern names.

The art of photo-zincography has been greatly advanced within the last few months; for whilst it was previously confined to the production of copies of existing documents, such as MSS., printed works, and line engravings, it is now employed at the Ordnance Survey Office for the production of copies of photographs in permanent ink, and at a very trifling expense. This art is therefore likely to prove of the greatest advantage to travellers, as photographs can now be sent or brought home, and prints to illustrate the account of their travels struck off from zinc plates or stone in any number that may be required.

GEOLOGICAL SURVEY OF THE UNITED KINGDOM.—The report of the last year's progress, which it has been my duty to make as Director-General of this establishment, contrasts favourably with that of the preceding year. Thus, the survey of Great Britain, under the management of Professor Ramsay, has extended over the Wealden country of Kent and Sussex and various midland counties, and has been extended northwards into Staffordshire, Derbyshire, Cheshire, and Lancashire. Again, sheets on the six-inch scale have been published of the last-mentioned county to show in detail the "faults" and complications of the coal-fields. Maps and sections on the same large scale have been finished in illustration of the carboniferous rocks of Scotland. The sale of all these maps has greatly increased.

The survey of Ireland under Mr. J. B. Jukes has also made good progress in the following counties—Queen's, King's, Clare, Galway, Longford, and Westmeath. The published sheets of the map now amount to 93 out of the 205 sheets into which Ireland is divided.

On the affiliated branches of this establishment, which it is my province to direct, it is unnecessary that I should dilate in a geographical discourse. I may, however, say with some pride, that the eminent professors of the Royal School of Mines have educated many promising youths in chemistry, metallurgy, physics, mechanics, and natural history, as well as in geology, mining, and mineralogy. The Mining Record Office, also an integral part of our system, and which is zealously conducted by Mr. Robert Hunt, has proved most serviceable to the Houses of Parliament and the nation in registering the mineral produce of the kingdom. These documents are not only important to the mining, commercial, and manufacturing interests of the country, but are highly appreciated by all foreign statists. Restricting my observations to the Geological Survey only, and the publication of our maps, it has naturally been a subject of great satisfaction to myself, that our labours should have been highly esteemed by geographers and geologists of all nations who attended the late International Exhibition. I may, indeed, particularly cite the opinion of M. Sella, a sound mathematician, and recently Minister of Finance of the kingdom of Italy, who having been officially employed to visit the mining schools and geological surveys of various countries, with a view to the application of the best system to Italy, thus reports upon the operations of our British survey:—"England is, without doubt, the country where geological maps are prepared with much greater accuracy than in any other land. The singular importance of her mining industries, the spread of the elementary principles of geology, the zeal of the geologists charged with these labours, and the precision of their works have been so carried out, that few undertakings of the British Government have so much contributed to the benefit of the public as the Geological Survey of the United Kingdom."

Recent British Publications.—I must defer till next Anniversary, notice of the recently published works. I may, however, notice 'The Introductory Text Book of Physical Geography' of Mr. David Page, as being most useful to young geographers, and scarcely of less value to many of my older associates, in bringing before them

in a clear and condensed form all the leading elements of geographical science.

For the small price of two shillings, any Fellow of our Society can provide himself with a copy of this work, which, illustrated by many diagrams, conveys to the student and brings back to the mind of the proficient all the chief data, whether astronomical, geological, or meteorological, by which the outlines of the crust of the earth are determined. The author has, indeed, particularly pleased me by showing that the changes of land and water can only be well understood by the explanations which geological researches have revealed. In addition to a clear sketch of the effects of climatological influences, he points out the nature of the distribution of plants and the lower animals, and also describes the races and varieties of man, and his advancement through the means of civilisation and culture.

In short, by the manner in which he connects Geography with Ethnology, Mr. Page affords the best possible reason for the union of these sciences; and, as it fell to my lot to bring about that union in one of the Sections of the great national meeting of the British Association,* so I am the more gratified in perceiving that Mr. Page has based these, the last arrangements of matter and life on the surface of our planet, on their true foundations, and has thus connected them with the numerous previous changes which the earth has undergone.

I also refer my associates with much satisfaction to a still smaller, but not less important work in awakening the mind to the harmonious adjustments of Nature. In his Essay on 'The Correlation of the Natural History Sciences'† Professor Ansted has eloquently and clearly shown, in 50 small pages, that Physical Geography, General Physics, Chemistry, Astronomy, Zoology, Botany, and Geology are all correlative—all demonstrative of the marvellous unity of design of the Creator.

In reference to the maps recently published in the British Isles, I must also defer any comment on them to the ensuing Anniversary.

Geographical Publications in Germany.—The zeal with which geographical works, not merely relating to their own country but to the world at large, are issued by Germans is truly remarkable. I

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* The Geographical and Ethnological Section.

† MacMillan and Co. 1863. Price 1*s.*

cannot now pretend to notice the very numerous publications and maps which have issued from Vienna, Berlin, and the smaller cities of Germany. Of the latter, however, Gotha has been rendered so celebrated by the 'Mittheilungen' of Justus Perthes, so ably edited by Augustus Petermann, and so extensively circulated through Europe, that I deem it to be highly useful for geographers to have thus placed before them (as below)* a list of the

* The following are some of the original papers contained in the 'Mittheilungen' for 1862-63:—

EUROPE.—*E. v. Sydow*, Report on the Progress of the great National Surveys of the European States in 1861 and 1862 in particular, and of recently published maps in general. *A. Petermann*, on the English Admiralty Survey of the Western Coast and Islands of Scotland (with map). *A. Petermann*, on the Cartography of Denmark and the Duchies, and her Colonies in Iceland, Greenland, Faroe, and the West Indies (with map). *General Blumberg*, Director of the Imperial Russian Ordnance Office, Cartography of Russia in 1862. *General Chodzko*, the Russian Surveys in the Caucasus. *Captain Iwashintsoff*, Russian Survey of the Caspian Sea (with map, showing the soundings by blue tints, from 100 to 100 sashen, and representing two great depressions of the sea-bottom of upwards of 400 sagenes); Measurement of the Arc of the Meridian between Palermo and Christiania. *L. v. Babo*, on the Wine-Growing Districts of Germany, and the characteristic features of the different kinds produced. *Professor Rogg*, physico-geographical essay on the Basin of the Boden-See. *Lieut.-Colonel Sonklar*, the Alpine Group of the Hohen Tauern. *Coaz*, the Alpine Passes of Graubünden, and the Railway between Switzerland and Italy. *Dr. A. Ficker*, the New Administrative Division of Austria (with map). *J. Schmidt*, Director of the Observatory at Athens, Travels in Greece, and Hypsometric Measurements. *V. Baer*, the project of the Manytsh Canal. *Magister v. Seidlitz*, Journeys in the Caucasus, 1862.

ASIA.—*Berghaus*, the Present and Future Lines of Communication between Europe and India. *Dr. Th. Kotschy*, Journey to Cyprus and Asia Minor, 1859. *Dr. O. Blau*, Journey in Asia Minor and Kurdistan, 1857; and on the Orthography and Meaning of Turkish Names of Places in Asia Minor. *Dr. A. Schläfti*, Ethnography of Kurdistan and Mesopotamia; and the Political Condition of the countries round the Persian Gulf. *Julius*, Survey of *Captain Selby* and *Lieut. Collingwood* of Lower Mesopotamia, by order of the Bombay Government (with map). *Maximovitsh*, Journey on the River Sungari, in Mantchooria, 1859. *Chalmers* and *Hawk*, Journey on the Tong-kiang or East Canton River, 1861. *F. v. Richthofen*, Journey in Siam and Pegu, 1862.

AFRICA.—*A. Petermann*, Map of the Interior of Africa, in 10 sheets. (This map extends from Cairo in the north to Kazeh and Lake Tanganyika in the south, and from Karthum on the east to Lake Tsad on the west; it has been constructed with great care and labour from published as well as manuscript materials: hundreds of works and papers having, I understand, been consulted. Of this extensive work, 8 sheets are now published, accompanied by seven memoirs, which have been selected from among the unpublished materials consulted in constructing the map. These are *M. v. Beurmann's* Journey through the Nubian Desert, 1860; *Dr. Th. Kotschy's* Journey in Kordofan, 1839; *Brun Rollet's* Journey in the Marshy Regions of the Bahr el Abiad and Bahr el Gazal, 1856; *Dr. E. Behm*, the Eastern Portion of the Desert of Sahara, including the Country of the Tebu; *M. v. Beurmann's* Journey from Bengazi to Murzuk, 1862; *Marquis O. Antinori's* Journey from the Bahr el Gazal to the Country of Djur, 1860-61; and *M. v. Beurmann's* Journey from Murzuk to the East into the country of the Tebu, 1862. The two last sheets, 8 and 9, are in the press, with an original paper by *Heuglin*, on the Upper Blue Nile and its Tributaries; as well as a memoir by the Missionary *Mortang* on his journeys to the East and West of Gondokoro, 1859.)

I further learn from Mr. Petermann that reports have been made on the journeys and observations of Messrs. Heuglin, Heudner, Kinzelbach, and Munzinger, in the regions of Eastern and Inner Africa, extending from Juakin in the North, southwards through Abyssinia to near the 10° of N. lat., and from Massuah in the East to Kartum and El Obeid in the West. (Eight valuable maps of this region, with astronomical positions and observations

various papers and maps issued by that establishment in the past year. In addition to this copious list, I must call attention to a new edition of 'Stieler's Atlas,' in 80 sheets, which Petermann is engraving on copper, in order to render them more clear and distinct than any lithographic map can be made. The specimens of these sheets which I have received, illustrative of Great Britain and Ireland, Denmark and her Colonies, Upper Italy, Australia, West Australia, Tasmania, and New Zealand, are much to be commended. Supplementary to Stieler's Atlas, our indefatigable German associate is preparing a still larger series of 300 sheets. His idea is to supply in full and careful delineation all those details which are inadequately represented, and on too small a scale, in most existing Atlases. Thus Australia will be represented in 25 sheets. Another and well-executed map of Petermann's is the Geological Map of the Province of Auckland, in New Zealand, as prepared on the spot by my distinguished friend, Dr. Hochstetter, of the Austrian *Novara* expedition. This author has just published a beautifully illustrated work entitled 'Neu Seeland,' which I commend to the attention of geologists and naturalists as well as to geographers.

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of altitude, have been received from these travellers, and are being prepared for publication in the 'Mittheilungen.') The other communications relating to Africa, are *M. v. Beurmann's* Journeys in Nubia and Soudan, 1860 and 1861. *Dr. A. Roscher's* Notes of his Journey from Zanzibar to the River Lufiji, 1859. *Baron von der Decken's* and *Dr. Kerschen's* Second Journey to Kilimanjaro, 1862, in which they ascended that peak to the height of 13,000 feet, and encamped in the snow. A memoir on the Exploration of the Gaboon Country, by *P. Du Chaillu* and others (with map); the River Systems of the Niger, Benue, Calabar and Cameroon (with very detailed map, showing the routes of all European travellers and native itineraries); on the Present State of Geographical Knowledge of Congo and Angola, a careful digest of the oldest as well as most recent authorities, including MSS. documents (with detailed map).

AUSTRALIA AND POLYNESIA.—Besides the illustration of the Expeditions of Stuart, Burke, F. Gregory, McKinlay, &c., as illustrated by four maps which have recently been brought out in one clear compendious map, the principal original papers have been those by *F. v. Hochstetter* of his Journeys and Observations in New Zealand. Of this traveller four papers have been given, illustrated by four maps, viz., one general map of New Zealand, a topographical map of the Isthmus of Auckland, and two geological maps of the province of Nelson and of the region of Roto Mahana, with its hot springs. Also, papers on the Guano Islands of the Pacific and the Islands to the East of New Guinea, by the Italian missionary, D. Carlo Salerio.

AMERICA.—Reichel's Observations on Labrador and the Missionary Stations there (with two maps of the country round Okak and Nain, from his observations). *Dr. H. Berendt's* Observations on Mexico. *Dr. Moritz Wagner* (three papers): Volcanoes of Central America; Exploration of the Interior of the Isthmus of San Blas, east of Panama (with map); and Province of Chiriqui (with detailed map). *Dr. A. v. Frantzius*, Costarica. *A. Keppler*, Expedition of the Dutch and French into the Interior of Guiana, 1861. *J. J. v. Tschudi*, Brazilian Province of Minas Geraes (with large map by Halfeld, from the official surveys in 1836-1855). *Burmeister*, Artesian Wells at Buenos Ayres.

POLAR REGIONS.—The Swedish Expedition to Spitzbergen, 1861, in which *M. Forell* has added many new and important geological data, has likewise been well illustrated.

Having mentioned that expedition, I have much pleasure in requesting my hearers to peruse the third volume of the work of Dr. Scherzer, which gives in very clear and attractive style the historical narrative of that survey. When all the details which were collected by the physicists and naturalists of that memorable scientific expedition shall be published, Austria will doubtless receive the praise which is due to her for having sent a frigate round the world solely to augment our acquaintance with the natural productions, physical structure, climatic conditions, and inhabitants of various remote regions.

Greenland—Former Conditions of Northern Europe.—Our knowledge respecting the snow and ice clad region of Greenland has been from time to time largely increased by the communications of our foreign member Dr. Rink. It is in part through his memoirs, as published in our volumes, that geologists have been enabled to reason upon what they believe to have been the former glacial condition of Scotland, and other tracts in Northern Europe, during a period antecedent to the creation of man. Independently, however, of any acquaintance with the condition of Greenland, as explanatory of ancient phenomena, my illustrious friend Agassiz, in the year 1840, boldly applied to the larger part of the northern hemisphere, and specially to Scotland, the doctrine which he had derived from a study of the effects produced by glaciers in the Alps. Wherever he found that the hardest rocks of North Britain had been rounded off, polished, and striated by lines and furrows in the same manner as that by which the rocks beneath or on the side of existing glaciers are affected, there he contended solid ice had once advanced from the mountains to the sea-shore. This view, though supported vigorously by my dear friend and eminent master, the late Dr. Buckland, met at first with much opposition, though of late years it has been well upheld by much good evidence, patiently worked out by Professor Ramsay and various authors; and in the last years particularly by Mr. Jamieson of Ellon in Aberdeenshire, and by Mr. Archibald Geikie, of the Geological Survey. Now that the direct analogy of Greenland has been prominently brought forward, the bold theory of the great Swiss naturalist, who founded it on his knowledge of the Alps, has, to his great honour, been well sustained. Though once a sceptic as to a former spread of snow and ice over a large portion of Scotland, I have for some time been a firm believer in the application to that country of this portion of the theory of Agassiz.

The manner in which the snow of the mountains descends and in the first instance forms "névé," the solid glaciers which advance to the shores of Greenland, and the mode in which huge masses of these glaciers are broken off and launched into the sea, have been described by other authors, but by none more clearly than by Dr. Rink, whose long residence in Greenland has naturally given him favourable opportunities for observation. In his last memoir Dr. Rink has shown us, that though little water is apparent on the surface of the ice, yet that every glacier is a frozen mountain-river, which is greatly aided in its descent to the sea by a volume of water (about a sixth part of the whole icy mass), which flows either in interstices of the ice, or between the warmer subsoil and the thick cover of ice which prevents congelation. The proofs of the issue of large quantities of water from beneath the lofty ice-cliffs is seen by the issue of springs of fresh water, which rise like whirlpools at the external edge of the ice; and that some terrestrial living things are brought out in these agitated masses is proved by myriads of sea-birds being seen to hover over them, to obtain food in the brackish and muddy water.

The occurrence of an unfrozen lake at a certain distance inland in one of the great glaciers, and the occasional sinking of its water, is accompanied by a corresponding rise of the springs in the sea, and the rise of its water by their diminution. At first sight I thought it possible that this existing phenomenon might in some degree serve, though by no means entirely, to explain the manner in which Mr. Jamieson, adopting the theory of Agassiz, has recently accounted for the so-called Parallel Roads of Glen Roy; * the lake on whose edges these terraces are supposed to have been formed having been held up by a glacier, the successive shrinkings of which at intervals let the water off from higher to lower levels. But looking to the Greenland case as the result of occasional and frequent openings of channels for the water, I see nothing in it which will account for the gravel terraces of Glen Roy at separate and distinct heights. In our Highland example, I now believe with Agassiz and Jamieson, that the lacustrine waters were held up by a glacier; yet, knowing that each gravel terrace on their shores could only have been formed in tranquil periods, the distinct separation of the one from the other is to me a clear proof that sudden movements of the subsoil and rapid change of climate occasioned paroxysmal dislodgments of these icy barriers. By this

* See Quarterly Journal Geological Society, vol. xix. (1863.)

process the successive subsidences due to the sudden collapse and removal of large portions of glaciers will as well account for the distinct separation of terraces which were accumulated during periods of quiescence, as the successive upheavals of the sea-shore (as I shall presently show) explain to us clearly how the heaps and terraces of gravel with sea-shells, which occur at different altitudes around the British Isles, were produced.

In this way the geologist, reasoning upon true existing causes to which he can still appeal, calls up before the mind's eye the ancient physical geography of the surface at a period in all probability antecedent to the creation of man. Pursuing the same mode of reasoning into periods much more remote, he performs the part of the comparative geographer, and can, like Godwin Austen,* map out as pristine oceans the larger portions of our present continent and islands. For, as many of these masses of land are replete with the remains of marine animals, the inference is inevitable, that these materials must have been accumulated under the sea, and subsequently raised into the atmosphere to form dry land. On the other hand, as these desiccated sea-bottoms and sea-shores, which are now habitable lands, are filled with the detritus and fragments derived from ancient rocks; so in those tracts where there are no similar rocks at hand to account for such *spolia*, we infer that, just as the bottom of the sea has been raised up in one tract into dry land, so many of the ancient continents and islands from which such rocky fragments were derived, have disappeared and been submerged, though others remain above the waters. In this point of view the science of geology is true ancient physical geography.

But to return to the consideration of that glacial condition of the surface which geologists are pretty generally agreed upon as having been that which immediately preceded the creation of the human race. Believing, as I now do, that snow and ice formerly covered, during the whole year, my native Highlands, as well as the mountainous parts of England, Wales,† and Ireland, and, further, that glaciers descended from the higher grounds into the adjacent valleys and to the sea-board, transporting into the sea-bottom great blocks as well as enormous accumulations of clay and sand with striated fragments of rocks, constituting the "till" of Scottish

* See Quarterly Journal Geol. Soc., vol. xii., p. 1856, and other memoirs by Mr. Austen.

† On this subject Professor Ramsay's excellent and original Papers should be consulted; particularly the general reader should peruse his Essay on the 'Old Glaciers of Switzerland and North Wales,' in the 1st volume of 'Peaks, Passes, and Glaciers,' and also published as a separate volume.

geologists,* I must impress upon you that, in adopting this view, you must not embrace the largest portion of the operations of transport which took place in the glacial period. For, when the ancient glaciers advanced to the seas of that glacial epoch, they must (as is now taking place on the shores of Greenland) have launched from their cliffs huge icebergs, which were floated away by the prevailing currents, often to vast distances before they were melted. So in the present day numerous icebergs are wafted for hundreds of miles to warmer and southern seas, in which they disappear, and strew the surface of the sea-bottom with the blocks and pebbles with which they were loaded, to be mixed up with marine shells, sand, and mud.

Similar accumulations of a former period are called by geologists "marine glacial drift;" and, as they are found to be spread over wide terrestrial areas, both in low tracts and on hills of some altitude, it is clear that such low lands and hills were submerged during the mixture of these water-worn materials with sea-shells, and have since been elevated from beneath the sea to their present position. The coasts, and some of the bays, of Scotland, and of parts of the north of England, North Wales, and Ireland, afford, indeed, proofs of the glacial drift with shells lying at various heights above the sea up to altitudes of about 1300 feet.

In no part of Europe, however, are the evidences of glacial drift and huge erratic blocks so remarkable as in that enormous region over which such wide-spread detritus has been shed from the ancient glaciers of northern Scandinavia and Lapland, and been carried, eccentrically, to the shores of the North Sea—to the heart of Russia in Europe—over the plains of Poland—up to the foot of the Carpathian Mountains, and finally over all Northern Germany, including the kingdom of Prussia. On this point I may refer you to the detailed description of this grand phenomenon, given by my colleagues de Verneuil, von Keyserling, and myself, in our large volumes on Russia and the Ural Mountains—a work little referred to, I apprehend, by my countrymen. In the map attached to that work we laid down for the first time the south-eastern, southern, and south-western lines to which this, the grandest of all the European glacial drifts, extended, when all the kingdoms now covered by it must have been beneath the sea. In short, we showed clearly that

* See the very clear and able illustration of this subject, with a map shewing the various directions followed by the old glaciers, in the book entitled, 'On the Phenomena of the Glacial Drift of Scotland,' by Archibald Geikie. Glasgow, 1863.

the south of Sweden, as well as Finland, Russia, and all Northern Germany, must have been submarine when the erratic blocks derived from the glaciers of Lapland and the north of Scandinavia were floated far away, some of them to distances of 700 or 800 miles from their original sites.*

When we reflect upon the differences which the map of Europe at the period of this translation of glacial detritus must have exhibited, if constructed when whole kingdoms were under the sea, and that this grand operation was coincident with the existence of species of shells which are still living, and this, too, in the period antecedent to the creation of man, the physical geographer naturally appeals to the geologist, and craves from him some information as to the manner in which these enormous transformations of vast sea-bottoms into plateaux, continents, and islands, may have been brought about.

Now, although all geologists agree that such mutations did take place, we are not of one mind as to the manner in which these mighty changes were effected. One school maintains, that, if we extend existing causes backwards into countless ages, their effects have been adequate to account for all these changes of sea and land. On the other hand, there are many practical geologists, including myself, who see in most lands, and particularly in all mountain-chains, numerous great breaks and frequent inversions of rock formations, which are the clearest proofs of violent fracture, and which no amount of small and imperceptible risings could ever have effected. We therefore infer that some of the changes between sea and land, which accompanied and followed the glacial period, were, like many that preceded them, suddenly produced. Fully admitting that there were long periods of quiescence, during which the crust of the earth was subject, as at present, to small imperceptible movements only of elevation and depression, we believe that there were also at intervals powerful and sudden upheavals and downthrows, accompanied, doubtless, by great translations of water.

As regards the more recent elevations and depressions, we sustain this belief by showing that marine remains of the most recent tertiary date (the post-pliocene of Lyell) are found at different altitudes, separated from each other by great intermedial spaces, wherein such remains are not traceable or visible. These marine

* See 'Russia in Europe,' &c., chapters 20 and 21, with diagrams, and particularly the map, which shows the south limit of the erratics.

remains *generally occupy separate terraces or plateaux and elevated plains*, and are rarely if ever seen lying continuously in slopes upon a hill or mountain side, as if indicating a gradual uprising from the sea-shore to their present positions (often upwards of 1000 feet above the sea). Had slowly gradual causes been in action only, we should surely have seen proofs of the phenomenon by finding the marine remains sometimes arranged in *sloping* accumulations, and not in terraces or heaps at separate altitudes, which necessarily imply sudden jerks or lifts. We further argue, that, if the very slight and almost imperceptible movement (and, in some instances, perfect stability, of the present surface of certain tracts during the last 2000 years) were alone to be appealed to, no conceivable amount of time would explain many of the broken features which Nature presents to us.* Thus we know, from finding remains and bones of the same species of extinct mammalia in the gravel of Britain and the Continent, that at a, geologically speaking, recent period our islands were united with France. We also know, from the skeletons of the great Irish elk, which are found in the bottom of the bogs of Ireland, and also in the Isle of Man and in Cheshire, that when that creature lived these three islands must have been united. Yet it cannot surely be maintained, that by the ordinary action of the sea, and a gradual depression of the lands now sunk beneath the Irish Channel, England and Ireland were separated since the gigantic elk (Cervus megaceros) inhabited our lands. Nor by such gradual agency only can we ever account for the formation of the great channel which now separates England from France.

My firm belief, indeed, is, that these separations were effected in the first instance by powerful breaks of continuity, caused by much grander earthquakes than any of which history affords a record, due to expansive internal forces, which gave rise to great upheavals and subsidences in the crust of the earth. In more remote periods, or those of older geological date, these forces have, we well know, produced still more intense disruptions, and have even abruptly thrown enormous masses of hard pebbly sediment under the rocks out of whose detritus they have been derived.

But even looking at the mutations which were produced in the comparatively modern glacial period, and in that which immediately followed it, I view each of these sea-shell terraces to which I have

* There is every reason to believe that the eastern shores of Britain, where Cæsar landed, have not changed their relation to the sea-level since that event.

alluded, and which present themselves at separate levels around the coasts of continents and islands, as clear proofs that they were not placed in their present positions by continuous gentle gradual movements, but have been, I repeat, heaved up suddenly; such movements having been accompanied by powerful translations of water, which completed by denudation the work which great earthquakes and dislocations began.

I must not, however, wander further into such geological considerations, though I may take leave to say, in reference to the former changes of the surface of the globe, that whether we adopt, as I do, the theory of former, occasional, great paroxysmal disturbances, followed by long periods of quiescence, or that of an uniformity of causation during all ages, I have already said enough to show that the sciences of Geology and Geography are inseparably connected. This subject has, indeed, been well treated lately by Professor Ramsay in his published lectures on the Physical Geology and Geography of Great Britain.* Such of my hearers as wish to follow out this subject, and who have not time to study the great works of Lyell on the Principles of Geology, will do well to read a lecture of Professor Ansted, entitled, 'The Correlation of the Natural History of Sciences,'† in which the author happily demonstrates that Geology includes Physical Geography, General Physics, Chemistry, Astronomy, Zoology, and Botany, and is therefore a history of Nature during all time.

Asia.

Central Asia.—The southern portion of Central Asia—a region which is peculiarly interesting to British geographers—has recently received a valuable illustration through the explorations of M. Nicholas Khanikoff and his scientific Russian associates, to which some allusion was made in the Address of last year. As an experienced traveller in Persia and Bokhara in previous years, M. Khanikoff devotes the first sixty-eight pages of the work he has published to a fair and well condensed retrospect of the labours of his predecessors in the provinces of Khorassan, Yezd, Kirman, Seistan, and a part of Affghanistan.

Among the earliest geographers to whom M. Khanikoff renders just tribute, I am glad to see that the names of our countrymen,

* Stanford, 1863.

† London and Cambridge. MacMillan. 1863.

Rennel and Forster, stand out conspicuously; the one as the joint founder with the celebrated D'Anville of the science of Comparative Geography, the other as the first traveller, in modern times, who crossed the Continent of Asia from India to Europe, and who did so successfully in the disguise of an Oriental pilgrim.

In the early part of the present century (1807-9) the French *savans* Dupré, Jaubert, Trézel, and Truilhiet, who were attached to General Gardanne's Mission to Persia, zealously exerted themselves in extending our acquaintance with that country: and shortly afterwards further accessions to our knowledge were made by the travels of our countrymen, Pottinger and Christie, who were sent to explore Southern and Central Persia by my lamented and gifted friend the late Sir John Malcolm, when that distinguished man proceeded with a brilliant staff of officers from India to counteract French influence at the Court of the Shah. Of their travels and observations, as well as of the great general work of Malcolm himself, the 'History of Persia,' M. Khanikoff gives a succinct account. Enlivening his recital by allusions to the 'Lalla Rookh' of Moore and the 'Hadji Baba' of Morier, he assures us, and competent English Orientalists agree with him, that the last is the best work ever written, as giving a faithful and vigorous picture of the habits of the higher classes in Persia. Returning to pure geography and travels, he criticises somewhat severely the memoir and map of Macdonald Kinneir, as superficial and devoid of novelty; but praises highly the solid information contained in the rich materials given to us by Sir William Ouseley. He also mentions with much commendation the numerous geographical data and positive observations of Baillie Fraser and the acumen of Arrowsmith in preparing his map. He then shows how the lamented and gifted Arthur Conolly, from his more perfect acquaintance with the language of the natives, surpassed in many respects all his predecessors—especially in his faithful sketch of the social condition of the people. In one of his earlier expeditions, M. Khanikoff knew Conolly well; and quitted Bokhara only forty days before that unfortunate officer, and his companion, Colonel Stoddart, were assassinated by order of the crazy Emir.

M. Khanikoff next speaks of another of our English enterprising heroes, my dear friend Alexander Burnes, who formerly so captivated us by his lively and intelligent communications, and from whose flying notes Arrowsmith was enabled to construct the map of those

countries which for a long time was our only authority. This retrospect of the labours of British explorers and geographers will be read with pleasure.

Turning to other labourers, M. Khanikoff considers the maps of Zimmermann to be complicated and confused. The Russian mathematician Lemm is then brought out, and the vast number of his astronomical observations, his lines of march through Persia, as well as his determination of the heights of the mountains, are noticed. He informs us, that, in a journey of thirteen months, Lemm determined 129 geographical points, over 10 degrees of latitude and 15 degrees of longitude; eighty-three stations of observation being in Persia.

The admirable grouping of the labours of these travellers by the lamented Carl Ritter, particularly in regard to the southern parts of the interior of Asia as given in his eighth volume, is deservedly praised as the best type of descriptive geography; and I specially recommend those pages of M. Khanikoff (44 to 55) to the perusal of such of my associates as desire to seize the salient points of the writings of that great Prussian geographer and excellent man, Ritter.

As to the 'Asie Centrale,' that striking work of my illustrious friend Alexander von Humboldt, and which I duly analysed in former volumes of our Journal, M. Khanikoff alludes but little to it, since it scarcely touches upon Persia and Khorassan. On the other hand, he expatiates on the more recent military operations in Central Asia, such as the Shah of Persia's advance upon Herat, the Russian efforts to reach Khiva, and the English expedition to Cabul, showing how much geographical science has benefitted by such movements, though in a military point of view they were real disasters. We thus have references to the labours of Major D'Arcy Todd, who travelled from Teheran by Herat, Candahar and Cabul to Simla, and was subsequently for some years stationed at Herat as our Envoy; and we have notices also of Major Todd's assistants, James Abbott and Richmond Shakespeare, both of whom passed from Herat by Khiva and Orenburg to the Russian capital; the journey of the latter officer having been recorded at the time in our Journal.

Not omitting to notice the value of the astronomical and hypsometrical observations of Major Gough, published in 1841, M. Khanikoff further attaches much importance to data accumulated by Edward Conolly (brother of the traveller) in Western Afghan-

istan, and particularly in regard to the form of the great lake Hámoun in Seistan.

After an analysis and criticism of the labours of Ferrier and Keith Abbott, and due reference to the 25th volume of our Society's Journal, in which the tours of the last of these travellers are published, he speaks of the extraordinary journey said to have been performed by a French officer by the head-waters of the Heri-rud to Herat, which, if it be an authentic narrative, is deserving of the highest admiration.

Having thus given a succinct analysis, in chronological order, of recent travels in Central Asia, showing what French and English travellers had respectively accomplished, and how his countryman Lemm was the first to furnish solid materials for the construction of a map of Eastern Persia, M. Khanikoff points out how much remained to be done before a correct idea could be formed of the physical features of this region. In order, therefore, to obtain a somewhat better acquaintance with the great terraces at the foot of the mountains, with the hydrography of the country, the structure and direction of the mountain-chains, the fauna, flora, and ethnography of the region, as well as to make observations on terrestrial magnetism and heat, he proposed that a scientific expedition should be formed in Russia. His proposal was willingly embraced by the Imperial Geographical Society of St. Petersburg; and, aided by men distinguished in astronomy, botany, geology, and topography, M. Khanikoff was himself named chief of the Commission. For this station his previous journeys and experience in the East had thoroughly qualified him; for, besides having resided during many years in the North of Persia, he had been in one expedition the companion of that great botanist the late M. Lehmann, and at another period he had been, as before said, the friend and colleague of our unfortunate countrymen Conolly and Stoddart, at Bokhara.

In the volume already published, and which can only be considered as a prelude to the rich materials which are to follow, M. Khanikoff gives us a sketch of the whole line of march of the Russian scientific Commission eastward into northern Khorassan, then across part of Affghanistan to Herat, and thence into Seistan on the borders of Beloochistan, and further by Nilo, across the great saline desert of Lout, to Kerman. Having sent observers to Tebes and other places, he returned by Ardekán to Teheran. In perusing the sketch of the difficulties which he had to overcome in transporting his small party across certain tracts, particularly the

great saline and waterless desert called Lout, the reader cannot but be forcibly impressed with the enormous difficulty, if not, indeed, the impossibility, of moving any regular modern army, with its baggage, artillery, and commissariat, across such regions; and this may afford some comfort to those persons who have been needlessly alarmed at the bugbear of a Russian overland invasion of British India with a vast host!

As the small map which accompanies his memoir is very clear and satisfactory, and is essentially a great improvement upon the previous maps of these tracts, we have to thank M. Khanikoff for this instalment of a work, the first sketches of which were laid before British geographers by himself, at the Oxford Meeting of the British Association (1860).

The western portions of Persia, and much of the region to the south of the Caucasus, had been well examined by our early Medallist Sir H. Rawlinson and others, including General Monteith; but the geography of Southern and Eastern Persia, and the adjacent countries, has been infinitely better defined by the researches of M. Khanikoff and his party than by his precursors.

In a short time it is to be hoped that very valuable additions to our acquaintance with the geography of Western Persia will also be made by the publication of the labours of Lieutenant Glascott, R.N., who was employed as surveyor from 1849 to 1853 with the Anglo-Russian Commission, appointed to fix the delimitation of the Turco-Persian frontier from the mouth of the Euphrates to Mount Ararat; and who has been occupied ever since, in conjunction with his Russian colleague, in laying down the result of the survey on a map of enormous dimensions, and containing the correction of the geographical positions of many places to the east and west of that hitherto ill-determined frontier. The frontier of Persia in the opposite or south-eastern direction seems to have been of an equally uncertain nature, and at various periods to have encroached considerably upon Beloochistan. Of that region, and particularly as regards the northern coast of the Indian Ocean, we have acquired information, which is quite fresh, from the journey of Major Goldsmid, of which I have elsewhere spoken. In his examination of the particular track along which the electric telegraph which is to connect British India with London, will pass, that officer has ascertained that several of the rivers and other geographical points have been very inaccurately placed on all former maps. In fact, although Pottinger, Masson and others have travelled extensively

in Beloochistan Proper, and although we have marched an army through the province and still retain a Resident at its capital, we were very ignorant of the sterile region which forms its southern shores, and which is governed by petty chiefs under the suzerainty of the Khan of Kelat.

Proposed New Route to British India.—In the preceding notice of the character of Lord Gifford, I have specially alluded in a note to the striking photographs of the Himalayan and Cashmirian regions by his Lordship's brother, Lord William Hay. After a long residence in the mountainous parts of India, and a frequent intercourse with travellers from the north-west, or the countries of Bokhara, Kashgar, Ladak, &c., Lord William contemplates a return to his post by an overland route which no one individual, and certainly no European, has yet followed. If he can meet with the protection of the Russian Government, he would take the line across Siberia, followed by the lamented Atkinson —*i. e.* by Nijni Novgorod, Ekaterinburg, Omsk, Semipalatinsk, Kopal to Issyk-kul. He calculates that he might reach that distant place in fifty-two days' travelling from Nijni Novgorod, or say in two months. From Issyk-kul to Kashgar is only 250 miles, and allowing for every difficulty he assigns to this march fifteen days; from Kashgar to Le by Yarkand, he gives thirty-six days, and from Le to Kungur in Cashmere fifteen days, or in the whole about four months.

Now, Lord William Hay is not a wild schemer, but a practised traveller—one of the four brothers of that family * who have traversed the Himalaya to the plains of Thibet. After fourteen years' residence in those mountains and in Cashmere, and after obtaining for us all the real intelligence we possess respecting the fate of poor Adolf Schlagintweit at Kashgar, he has well weighed the possible obstacles to such an enterprise. He knows that the present political state of affairs in the region of Kashgar and Yarkand is very different from what it was when Adolf Schlagintweit was assassinated; and he also infers that in the journey from Issyk-kul or those wild hordes of Kirghiz over whom the Russian power extends he would have great advantages if furnished with Imperial passports and support. I need not say that, as I warmly approve the bold project, I will do all in my power to induce the Imperial Government to enable this enlightened British nobleman to execute a journey which has never been performed by any European, and

* See Gifford in the Obituary.

which, if he passed over the Karakorum into Cashmere, would unite in one long chain the old route of Marco Polo with the journeys of modern travellers who have hitherto vainly endeavoured to pass from the east to west or from west to east in those latitudes.

Indian Navy.—On the 30th of April of the present year the Indian Navy ceased to exist; the Commodore's broad pendant having been hauled down at Bombay on that day. I cannot, therefore, allow this occasion to pass without making some allusion to the debt which geography owes to the officers of that distinguished service. The war services of the Indian Navy in Burmah, China, and Persia, as well as the beneficial and enduring results of its repression of piracy and the slave-trade are well known. These services have been varied, honourable, and useful; but, in the eyes of geographers, the wide-spread and lasting utility of the excellent surveys made by officers of the Indian Navy on the coasts of India and Arabia, in the Persian Gulf, and in the Red Sea, on the coasts of China and Cochin China, hold an equally prominent place; nor as a geologist can I omit to call to your recollection the admirable memoirs of Dr. Carter on the structure and fossils of the coasts of the Persian Gulf. In the abolition of the Indian Navy, the Bombay Geographical Society will, I fear, sustain a loss which it will not be easy to replace; while the numerous able papers scattered through our own volumes, by Kempthorne, Selby, and other officers of that service, remind us that we are sharers in the loss. I trust, however, although their honourable career in the Indian Navy has come to a close, that many of the gallant officers who composed it will still be enabled to render their great ability as surveyors and explorers available for the advancement of geographical science.

Telegraphic Communication by Land and by Sea.—Two years have elapsed since Sir Henry Rawlinson brought under the consideration of this Society the importance of constructing an overland telegraphic communication with India, and pointed out how far the work had already proceeded, and the track which ought to be followed in completing the remainder of the line. He justly observed, that the Royal Geographical Society would do itself honour by encouraging this great work. At that time, however, no one had accurately examined the nature of the country of Mekran at the head of the Indian Sea, which lies between the British Indian frontier, near Kurrachee, and the mouth of the Persian Gulf. That task has been now accomplished by Major Goldsmid, who has shown

that there are no real physical or political obstacles throughout the tract in question; the greater part of which is tributary to the Khan of Beloochistan, the western portion only being subject to the influence of Persia. I have elsewhere alluded to the sketch of Major Goldsmid as making us acquainted with a tract, which, though it was, in days of yore, the scene of great events, had so passed into oblivion that, save for the unpublished notice of it by one Englishman, a Mr. Macleod, who traversed a portion of it only, the nature of the country was quite unknown to us; the position even of the rivers which flow into the sea having been most incorrectly laid down on all our maps. The search for the best line for the construction of the most comprehensive civilizer of modern days, the Electric Telegraph, has thus called once more into prominent notice a region, the shores of which, in all probability, were coasted by the ships of Solomon when trading to Ophir, and the interior of which was undoubtedly traversed by the armies of Alexander the Great.

The direction of the whole of this telegraphic communication, which is to be in part submarine, has fortunately been placed under the management of Colonel Patrick Stewart, an officer of the Indian Army, signally distinguished by the great ability and intrepidity with which he rapidly constructed those lines of telegraph in India, during the late rebellion of the native army, which were of such essential service to Lord Clyde.

Colonel Patrick Stewart, who has personally examined a great portion of the line, including the coast of Mekran, informs me that the first link of the chain between India and Europe is that to which I have just alluded as having been explored by Major Goldsmid. This section, from Kurrachee to Gwadel, measures about 400 miles, and along a considerable portion of it, 250 miles from Kurrachee, telegraphic stations have already been erected. From Gwadel the line becomes submarine for about 400 miles as far as the Arabian headland called Ras-al-Jebel, at the entrance of the Persian Gulf, from which station another submarine stretch of 430 miles will bring the telegraph to the port of Bushire, whence the land-line will branch off, passing through Shiraz and Ispahan to Teheran and eventually to Constantinople. A branch-line is also to be extended from Teheran to Baghdad, which will provide a secondary or alternative means of communicating between Baghdad and Bushire. The principal and more direct line, however, between these points, is that which it is proposed to carry out

by means of a submarine stretch of 170 miles, from Bushire to Fao, at the mouth of the Shat-el-Arab river, and thence, by land, through Bassorah and along the western bank of the Euphrates, to ancient Babylon and Baghdad. The line from Baghdad to Constantinople, which was constructed some years back by British officers and workmen at the expense of the Turkish Government, continues in good working order, and telegraphic messages are thus constantly passing between London and Baghdad along a track which is more than two-thirds of the entire distance to India.

I further learn from Colonel Stewart that the ships from which the submarine cable will be laid are to leave England in July, and that the operation of submerging it will commence about the middle of November, and be terminated in December. It is also confidently expected that the land-line from Fao to Baghdad will be speedily finished, and that a direct and through communication from London to Calcutta will thus be for the first time established before our next Anniversary Meeting. Further, it is calculated that the alternative line through Persia will also be finished in the spring of next year, and that a double means will be thus afforded of communicating with our great Indian Empire.

While enterprise and capital are thus employed in connecting England with India, one of our associates, Mr. C. M. Grant, who recently contributed an instructive sketch of his travels from China to Siberia, across the Desert of Gobi, is now actively employed in the endeavour to induce the Government of Russia to establish a telegraphic communication between Kiachta and Pekin, and even, if possible, so to extend the Siberian line eastwards as to reach the shores of the Sea of Ochotsk, whence to the continent of Russian North America the transit requires a short submarine stretch only. There can be little doubt that, independent of other considerations, this would be the line of all others by which Europe and America can best interchange messages. Should such and other enterprises like these succeed, men, even of my own age, may live to find the electric spark carrying knowledge in a few minutes round the globe, and enabling us even to converse with our countrymen at the antipodes. Already an attempt is being made to put us in direct communication with Australia; Mr. F. Gisborne, brother of the late Sir Lionel Gisborne, being engaged in an attempt to organize a telegraphic service from Calcutta, through Burmah and the Malay peninsula to Singapore, and thence to Batavia, Soerabaya, Timor, and North Australia, *viâ* Melville Island.

Whilst the physical geographer is sure to acquire fresh knowledge by the examination of distant lands over which telegraphic wires have been, or are about to be laid down, and that submarine cables are in action in seas of such limited dimensions as the Mediterranean, the Red Sea, and the Persian Gulf, let us not despair of obtaining such a better acquaintance with the bottom of the great ocean which separates Europe from America, as will greatly obviate the difficulties which have hitherto impeded the successful accomplishment of the grandest of all the submarine telegraphs which have been proposed. To this point I next direct your attention.

North Atlantic Sea-Bed.—In contributing to our better acquaintance with the natural history of the sea, as ascertained during the voyage of H.M.S. *Bulldog*, under the command of Sir Leopold McClintock, Dr. Wallich * produced, by soundings at great depths, excellent materials to enable men of science to appreciate more correctly than before, the feasibility of laying down a submarine telegraph between Ireland and North America. Extending the Bathymetrical limits of animal life in the ocean to the great depth of 7500 feet, or 1½ mile, beneath its surface, and working out accurate data as to the varied condition of the sea-bottom at different depths, he was well qualified to propose to our Council a scheme for such a systematic survey of the sea and sea-bed between Ireland and Newfoundland, as might lead to the laying on a sound basis a submarine telegraphic cable between the two countries.

Attributing the fears and doubts as to a successful issue of the schemes put forth chiefly to the inadequate methods hitherto employed in examining the sea-bed by the rapid transit of our surveying ships, and by soundings taken on one line only at great distances apart, Dr. Wallich proposed that a much closer search should be made before telegraphic cables were lowered into unknown depths, and laid across submarine hills, gorges, and valleys, the irregularity of whose forms, as existing between the points hitherto sounded, might prove to be enormous. He argued that a full and proper submarine search was as essential a preliminary to a rational scheme of laying down a telegraphic cable, as a survey of the outlines of land was requisite for the engineer before he could accurately define the best and safest line to be followed by a railroad.

* See Dr. Wallich's work, published with the sanction of the Lords of the Admiralty, entitled 'The North Atlantic Sea-Bed.' London, 1862. Van Voorst.

Being of opinion that such an effort was well worthy of their encouragement, the Council of our Society supported the project of Dr. Wallich, not only in the belief that its execution must throw much light on this interesting branch of physical geography, but would also develope various phenomena of great interest in natural history, geology, meteorology, and physics. On my own part, being very desirous of seeing so noble an exercise of the searching powers of this great maritime nation set on foot under the management of so energetic a naturalist as Dr. Wallich, I earnestly recommended its adoption to the First Lord of the Admiralty. But, as the project matured, it speedily appeared that Dr. Wallich required two steamers for the effectual survey in question, which demand was considered to be too heavy at a moment when few vessels could be spared from our naval reserves; and hence the consideration of the subject has, for the present, been dropped. I hope, however, that in more quiet times a complete submarine survey of the Atlantic will be carried out, by the joint operations of nations on *both* sides of that ocean; and when that day arrives, I trust that the project of Dr. Wallich, with all his ingenious appliances, will obtain the countenance of the public, just as in an earlier stage it has met with the approbation of the Council of the Royal Geographical Society.

Japan.—The privilege accorded by treaty to the British Minister in Japan to travel through the empire has been taken advantage of by Sir Rutherford Alcock, who during a journey of thirty-two days traversed the island of Kiusiu and a great part of Niphon. In the interesting paper which was read to the Society, much light was thrown upon parts of the country heretofore but little known. Although Dutch Missions had occasionally gone overland from Nagasaki in Kiusiu to Yeddo in Niphon, their opportunities for observation were necessarily limited, owing to the rigour of the surveillance to which they were subjected by the Japanese Government. In the case of our Minister these rules were relaxed; and, although a good deal of jealousy was frequently manifested by the officials, we have acquired a great deal of most valuable and useful knowledge. The part of the road leading from Osaca to Yeddo, and which avoids Miako, traversed by Sir Rutherford, has, so far as we are aware, not been travelled over by any European: the Dutch Missions always following the route through Miako since the expulsion of the Portuguese and Spaniards more than two centuries ago. We have also had a short paper from Mr. Oliphant,

giving some account of the island of Tsusima, a spot which was visited by Europeans for the first time in the spring of 1861; and which derives its importance no less from its geographical position than from the magnificent and deep harbour which it has been discovered to possess.

In spite of these additions to our information of the geography of Japan, there is still much to be done. The whole northern and eastern portion of the central island of Niphon is still unexplored, the large island of Sikok has not yet been visited; while of the northern island of Yesso, which contains a larger superficies than Ireland, we know nothing beyond the observations made by Mr. Pemberton Hodgson during a very limited tour from Hakodadi. The interior, which is supposed to be uninhabited, is still a sealed book. It is to be hoped that no political difficulties will arise, to put a stop to the interesting work of exploration in a country which affords such a wide field for the labours, not only of geographers, but of men of science generally.

Mexico.—A good addition to the valuable descriptions of Humboldt respecting the meteorology of this country as dependent on its physical structure and outline has been recently published by M. Henri de Saussure of Geneva. Visiting Mexico before the French invasion the author has, notwithstanding the continual interruptions to the prosecution of travel caused by the civil wars which desolated that interesting region, succeeded in sketching in a very clear manner the great features, and also in explaining the causes, of its very remarkable hydrology.

South America. Peru.—Don Antonio Raimondy, who has been occupied for two years in exploring that part of the valley of the Amazons, and of its tributaries the Huallaga and Ucayali, which is comprised within the Republic of Peru, has recently published a valuable geographical work, with maps, which has increased our knowledge of that vast but little known region. Another Peruvian geographer, Don Mariano Paz Soldan, whose brother's work, 'Geografia del Peru,' has recently been presented to the library of this Society, is now preparing in Paris a large map of Peru, together with a volume of plans and views.

Mr. R. Clements Markham, while employed by the Indian Government in superintending the collection of seeds and plants of the quinine-yielding Cinchonæ in 1860, explored the courses of two of the principal sources of the great River Purus, one of the most important but least known of the tributaries of the River Amazons,

for a considerable distance, and thus added to the geographical information which he had previously collected during his travels in 1853 respecting this almost unknown part of South America.*

Brazil.—Mr. H. W. Bates, the former companion of Mr. Wallace, who, as a most enterprising naturalist and ethnologist, has recently become known to the public through his excellent new work, 'The Naturalist on the Amazons,' has also increased our geographical knowledge of the main stream of that great river from Ega to its mouth, and of some portions of its tributary the Tapajos.

Australia.—Much as had been accomplished in preceding years by the bold explorers of the interior of Australia, the past year is, if possible, still more remarkable in the amount of satisfactory results, as obtained by the journeys of McDouall Stuart, Landsborough, McKinlay, and Walker. To the progress of these adventurous men I last year adverted in the Address of Lord Ashburton; and now it is my pleasing duty to record their great success. On former occasions, after admiring many of the earlier intrepid researches, we had to mourn over the loss of that great traveller Leichhardt; and, in honouring Burke and Wills as being the first to reach the Gulf of Carpentaria by a direct route from Victoria, we, alas! could only revere the memories of those and other noble fellows, who had sacrificed their lives in the cause of geographical discovery. On the present occasion, however, the enterprises of the travellers have happily not been attended with any loss of life, whilst the objects in view have all been satisfactorily accomplished.

To begin with the last exploits of our former medallist, McDouall Stuart—and for which the late Governor of the colony of South Australia, Sir Richard MacDonnell, claims the blue riband of Australian exploration. No one can peruse the diary of Stuart's last journey from Adelaide on the southern to Van Diemen Gulf on the northern shore, without admiring the steady perseverance with which, in his last as in his first expedition, he overcame all the natural obstacles opposed to his progress. Thus, we mark with approbation his repeated and toilsome efforts to penetrate through a thick, waterless, central forest to the north-west. For, if those efforts had succeeded, he would probably have reached the sea at the mouth of the northern Victoria,†

* The volume which Mr. Markham has published descriptive of his last travels has been received with favour by the public, as embracing much interesting history of the native Peruvians with which we were unacquainted; whilst his successful translation of various species of the Cinchona plants to India, and the plantation of them in localities best suited to their growth, has met with the unqualified approbation of the Government of India.

† The Victoria was discovered and named by Capt. Wickham, R.N.

or that position to which I have twice adverted in previous Anniversary Addresses as the situation of all others on the northern coast best suited in my opinion for the establishment of a new colony. There are, indeed, physico-geographical causes which account for the salubrity of that intertropical station, and to these I shall allude in the sequel. This was the tract to which Stuart evidently intended to proceed. He was, however, driven from his endeavour to reach the sea-shore nearest to him at the head of Queen's Channel, and was compelled to take a due northerly route, which necessarily brought him to the sea on a much more eastern meridian. There the land runs out towards the equator in a broad promontory (the Arnheim Land of maps), which, though indented by fine bays, can scarcely be expected to offer the same advantages of climate and productiveness as the tract at the mouth of the northern Victoria. Still, as the route to it from South Australia has been shown to be practicable, even this district, in nearly 12° s. lat., will, it appears, be soon occupied. By a recent letter from Mr. Finke, of Adelaide, I learn that already a private company had been formed there for the purpose of transporting, in April of this year, sheep, cattle, and horses to the newly-discovered lands in Van Diemen Gulf, whilst a vessel with ample supplies will be sent round to meet the new settlers. This commencement will, I trust, induce Her Majesty's Government to take decisive steps as to the method by which this independent body of settlers and others who may join them are to be governed.

The knowledge we previously possessed, that the colonists of Queensland were rapidly pushing on their settlements towards the head of the Gulf of Carpentaria has been recorded in the despatches of Sir George Bowen, and enlarged upon by the Secretary of the Colony, Mr. Herbert, during his recent visit to the mother country. Before these facts transpired Sir Charles Nicholson, on his last return from Australia, pointed out, in a well-argued document addressed to Her Majesty's Secretary for the Colonies, of which I have seen a copy, that large portions of Northern Australia would assuredly be soon occupied by migratory bands of colonists. He therefore called the attention of Her Majesty's Secretary of State to the confusion and disasters which would follow, if neither law nor system were established by Imperial authority for the government of such broad lands. Sir Charles Nicholson has, I think, successfully shown that any colony on the North coast, or even at the head of the Gulf of Carpentaria, would be much too distant from Queensland or South Australia

to be governed with effect from either Brisbane or Adelaide. And now that the colonists from Adelaide are really about to establish themselves in the distant Van Diemen Bay, the very case suggested by him has occurred and some action will, I trust, be taken by the Imperial authority. The establishment of a separate colony on the North coast of Australia has so long been advocated by myself, whether for commercial purposes or for political and maritime considerations, that I rejoice in having lived to see the dawn of the realisation of this great object. The subject is now about to be brought in a striking manner under the notice of our rulers, who, at no cost to the mother country, have simply to give titles to the possession of rich lands, the sale of which, as Sir Charles Nicholson shows, will speedily far more than remunerate the small outlay which is called for in the outset of such an organisation.

But, whilst the success of any settlement on the north coast is a problem about to be solved, I must again express my regret that the Queen's Channel, at the south-east end of Cambridge Gulf, and at the mouth of the northern Victoria, should not have been the spot whereon the first experiment was to be tried by the settlers. The deeply-embayed position of that site, and the simple fact of its being 4 degrees further removed from the Equator, as well as being bounded by large masses of plateau-land, fairly entitle us to believe that such a situation would be much more likely to secure the health and well-being of the settlers than the Van Diemen Gulf of old navigators, which is about two hundred miles more northward, and on the verge of the heated Indian Ocean. It is true that Van Diemen Gulf is protected from the storms and tornadoes by Melville Island and the Coburg peninsula, on which our former ill-selected and exposed station of Port Essington was placed; but still this first experiment would have been more likely to succeed, especially if the mouth of the Victoria had been the site chosen.

In comparing new maps of Australia with those of older date, I find, on referring to the publications of the Society for the Diffusion of Useful Knowledge, that, in their Atlas issued in 1844, Australia is defined as consisting of the colonies of New South Wales, Van Diemen's Land, Port Phillip, South Australia, West Australia, and *North* Australia. The first, or our oldest settlement, has now had taken from it the region known to former geographers as the Moreton Bay Settlement, which has expanded into the vast and flourishing colony of Queensland (of which hereafter); Van Diemen's Land

has become Tasmania; Port Phillip, then holding a population of 3000 only, has swollen into the rich auriferous land of Victoria, with its grand commercial city of Melbourne; and, whilst West and South Australia have both largely increased in size and importance, the so-called colony of "North Australia" has disappeared from all our maps as an unknown territory! Yet, on the very map to which I have alluded, the great headland to which McDouall Stuart has found his way from the south, has on it, besides the name of Arnheim Land, the following words engraved in large letters, "Colony of North Australia, established 1838." In the legend of the map no population is indeed affixed to it; but now, after the lapse of a quarter of a century, a few spirited Australian colonists are about to revive the forgotten name of the "Colony of North Australia." *

This result will, indeed, be accelerated by the wise suggestion of the Governor of Queensland as now adopted by Her Majesty's Secretary for the Colonies, that a commercial and careening maritime station be established at Port Albany, near Cape York, at the north-eastern extremity of this vast country. In a letter to myself, dated November 19, 1862, Sir G. Bowen, after describing his voyage of exploration of all the north-eastern coast, and showing from the experience of the naval authority, how a safe passage for steamers may always be made within the great Barrier Reef, says of Port Albany, "that it is perhaps destined one day to be the Singapore of Australia." Well may we anticipate such a result when we mark the extraordinarily rapid progress of that flourishing new colony of Queensland. In a recent despatch to the Duke of Newcastle which has been communicated to us, Sir G. Bowen calls the attention of his Grace to the progress and present condition of the colony, which, as now defined, has a surface nearly six times greater than that of the United Kingdom, and the very grazing grounds of which are about twice as large as the British Isles; to say nothing of the tracts peculiarly adapted for the growth of cotton. The map which is attached to the Colonial Almanac of Queensland is worthy of commendation as being a correct delineation of the boundaries and divisions of a country which its accomplished Governor considers to be "undoubtedly the most favoured in soil and climate of all the provinces of the British empire" (Letter to the Duke of Newcastle, 8th Jan., 1863).

From the results of these considerations we naturally turn to the

* Whilst I write, a North Australian Company is in the course of formation in London.

recent exploits of Landsborough, McKinlay, and Walker. Last year we had, alas! to mourn over the deaths of those noble fellows, Burke and Wills, who were the first to go from Victoria to the sea at the head of the Gulf of Carpentaria, and lost their lives on their return. Well may the motto "Præmiando incitat" be applied to the legislature and inhabitants of Victoria, who have done infinite credit to themselves in removing the remains of those geographical martyrs from the sands where they lay, and in erecting monuments to their memory at the metropolis from which they proceeded.

It is indeed cheering to the heart of every geographer and traveller to read the accounts given by the press of Melbourne of the depth of feeling exhibited by the Governor, Sir H. Barkly, the Legislature, as well as by the crowds of the inhabitants who came together to do honour to the deceased explorers, when monuments were raised to their memory.

To determine with precision the tracks followed by the deceased travellers, and to define the amount of good country for settlement in the region so properly named by Sir H. Barkly "Burke's Land," three of the Colonial Governments have been rivalling each other. In the first place, it was as just as it was honourable to the rich colony of Victoria, that she should take the lead in the endeavour to afford succour to the expedition of Burke and Wills. Accordingly, the ship *Victoria*, under the command of Captain Norman, was despatched with supplies to the head of the Gulf of Carpentaria; whilst arrangements were made with the Government of Queensland for the transmission by the same vessel of a party to explore inland under an able and experienced surveyor, Mr. Landsborough. It was also further arranged that Mr. Walker should, with his native mounted police (all bushmen), traverse the country between Brisbane and the head of the Gulf of Carpentaria. The shipwreck which befell the *Firefly*, conveying Landsborough and his party through Torres Straits, and the riskful but successful operation by which the water-logged tender was tugged round the headland and brought up to the mouth of the Albert River, at the head of the Gulf of Carpentaria, have been already recorded. It was then that the researches of Landsborough commenced; and, though the primary object of the Victorian expedition for the relief of Burke and Wills was, alas! frustrated by the deaths of those gallant men, the subsequent results were in the end most satisfactory. For, by these researches we now clearly know that the territory at the head of the Gulf of Carpentaria was most cor-

rectly named the "Plains of Promise,"—a land not too hot, according to Landsborough, for British colonization. Realising the truthfulness of the records of Burke and Wills as to the vast tracts of good land, we may be assured that that region will be soon occupied by our settlers; for Landsborough has told us, and McKinlay has confirmed it, that the country south of the Gulf of Carpentaria is a land rich in herbage, and well fitted for the pasturing of horses, horned cattle, and sheep—the plains being as fattening as any he had ever seen in Australia, and the climate as cool as in many parts where wool is profitably grown (see 'Sydney Herald,' Jan. 21, 1863).

We may also rejoice in the fact recorded by the Exploration Committee of the Royal Survey of Victoria, "that the explorers of the Victorian Expedition were the means of opening out a path from the southern settlements to the northern shores, which they hope will at no distant day be made available for telegraphic communication, by way of Batavia and India, with the mother country." The realisation and complete establishment of such facts are in great measure due to the sagacious and trustworthy explorer, Mr. Landsborough. The son of an accomplished Scottish naturalist, who was an ornament of the Presbyterian Church, Mr. Landsborough was so educated that he possessed all the groundwork for success. After first exploring for 200 miles to the south-west, he took up the return line of Burke and Wills, and first following up the Flinders River south-eastward, he crossed the dividing ground and descended along the banks of the Thomson, and was on his march for Burke's depôt, when, aware of the insufficiency of his provisions, he turned to the east and south, until he struck the River Warrego, which he followed to its junction with the Darling above Fort Burke. I must refer you to the cheering despatch of the Governor of Victoria, Sir H. Barkly, recently read before the Society, for convincing proof, that Mr. Landsborough has practically accelerated in a remarkable degree the formation of a northern settlement. Geographically he has taught us that Sturt's desert extends but little to the east, and that between it and the foot of the Eastern Cordilleras there is a vast, rich, and well-watered pastoral country.

Already stock had been driven from New South Wales to these new grounds, and the public press of Victoria predicts that in a year all the region to the east of 140° E. long. will be mapped out and occupied for grazing purposes. The prospect of easy access

to the sea is also a great attraction to squatters; and it is even said that plans have been already drawn for the construction of a city at the mouth of the Albert on the Gulf of Carpentaria! In short, Mr. Landsborough declared, at a public dinner given to him at Sydney, and at which the Governor, Sir John Young, presided, that if he were going to Carpentaria with stock, he should consider the worst of the journey over when he came to the head of that Gulf.

The journey of Mr. Frederick Walker, with his native bushmen, or mounted police, to the head of the Gulf of Carpentaria, thence up the Flinders, and eventually to the north-east, at Port Denison in the colony of Queensland, has been productive of some satisfactory results. Thus, he made out that it was near the mouth of the Flinders River that Burke and Wills had made their last camps. He also informs us, in laying down the course of the Flinders and Norman rivers, that, although there are fertile plains at some distance from them, the valleys in which they flow are subject to extensive inundations.

It is due to Mr. Walker to say, that, in parts of his course, he made such astronomical observations as enable us to determine the true course of the Flinders River. Nor must his observations upon the heat of the climate be lost sight of, when we desire to estimate the probability of the success of British settlements.* We have yet, however, to learn the duration of the heat in these regions, and to what extent it is tempered by night breezes and by rains.

On these subjects we have a third good authority in that of McKinlay, who, after great exertions, reached the Gulf of Carpentaria from Adelaide in South Australia, and eventually emerged in the northern parts of the colony of Queensland. To the earlier efforts of this bold explorer, as organised under the government of Sir Richard McDonnell, allusion was made in the Anniversary Address of last year, when, in aiding my predecessor, I spoke of Mr. McKinlay's discovery of the relics of an Englishman, which have since been ascertained to be those of Gray. From that scene of misfortune, near Cooper Creek, McKinlay's course was first to the N.N.W.; then making a deflection to the east, on account of great floods, he took a course nearly north until he reached the mouth of the Flinders River in the Gulf of Carpentaria, whence, deviating

* Since this Address was read, I have seen Mr. Bourne, the companion of Landsborough; who informs me that, owing to the coolness of the nights, the climate at the head of the Gulf of Carpentaria in S. latitude 18° is much less oppressive than on the Darling River in S. latitude 31°. So little does mere latitude govern the distribution of heat.

to the E.S.E., he ended his trying journey of nearly a year's duration at Port Denison, in the northern part of Queensland. The narrative of this arduous journey of the "Burke Relief Expedition," bound up with three maps, is, as well as the Journals of Stuart and Landsborough, to be purchased in this country.* In perusing these Journals, I have equally admired the sagacity, self-reliance, and endurance of each of those bold explorers; and it would have been a source of real gratification to me to have recommended to our Council that, at this Anniversary, Gold Medals should have been assigned both to Landsborough and McKinlay. But the Council have felt themselves bound to prefer the antecedent labours of Mr. Frank Gregory in the north-western portion of Australia, which very nearly obtained for that geographer one of our medals last year. In fact, Mr. Frank Gregory had made astronomical observations throughout a large, well-watered, and productive region, extending over 33 degrees of latitude and 19 degrees of longitude; whilst, with every admiration of their prowess and success, Landsborough and McKinlay have only laid down their routes by dead reckoning. Our highest geographical distinction must therefore be assigned to the man who worked out our problems scientifically. At the same time we have taken another mode of testifying our admiration of the services of those intrepid and successful explorers, who have traversed this vast continent, by handing to them other tokens of our entire approbation of their labours.

Along the route followed by McKinlay and his associate Middleton, who has recently come among us, we find the same alternations of poor and arid sands,† with well-watered and rich tracts, and the same proofs of occasional inundations, as in the regions visited by McDouall Stuart. In all these three successful expeditions, as well as in that of Burke and Wills, we have now the proofs before us that, whatever may be the obstacles, Australia can be traversed from south to north by different routes.

Nothing is more striking in the narrative of McKinlay than that, in approaching the Gulf of Carpentaria, after upwards of eight months of travel not only had he still with him camels and horses,

* Besides the detailed Journals, a very interesting volume has appeared whilst these pages are going through the press, entitled 'Tracks of McKinlay and Party across Australia; by John Davis, one of the Expedition. Edited by Mr. W. Westgarth.' (Sampson Low and Son.)

† Mr. Middleton exhibited some of this sand at the Meeting of the 11th May, which is of so red a colour that he compared it to "Cayenne pepper."

but also that the sheep which were left (soon afterwards eaten) had "their kidneys well covered" with fat, in south latitude 19°, notwithstanding their fatiguing journeys and the long grass on which they fed.

The last efforts of McKinlay and his associates, when traversing a tract in great part hard and stony, to reach Port Denison in the north of Queensland, and after their bullocks and camels had all been eaten, is worthy of all commendation.

The appearance at our last Meeting of Landsborough himself, and of Middleton the companion of McKinlay, enabled us to satisfy ourselves that British colonisation can be successfully extended into Tropical Australia. If mere geographers had made this assertion, their dictum would not have made the same impression on Englishmen and Colonial residents as the positive declarations of two practical men like Landsborough and McKinlay, both of whom began as settlers, and having by their sagacity and conduct made independent fortunes, are surely the best possible judges on this debated subject. These gentlemen have assured us that many thousands of sheep are now thriving within the tropics in North Australia, though we have yet to learn whether these animals will permanently flourish if carried to the northernmost shores of the continent.*

In addition to the discoveries recently brought under our notice, let me refer my associates to the 28th Volume of our Journal for evidences showing the feasibility of establishing British colonies on some parts of the north coast. There they will find, not only the full accounts of the memorable researches of our medallist, Augustus Gregory, after he left the mouth of the Victoria, but also the notes of Mr. Wilson, the geologist of the expedition, who, being left in charge of the camp and having resided there for ten

* Mr. Brodribb, late a Member of the Legislative Assembly of Victoria, has written to me expressing his belief that North Australia will become a great wool-producing country. He shews that there are tracts in the southern parts of Australia less propitious for the breeding of sheep than certain parts which approach to the tropics, and where he has reared many fine ones. At previous Meetings of our Society, Mr. M. H. Marsh, M.P., who is also a large proprietor, has assured us that sheep thrive well in parts of Australia to the north of any tract which was previously pastured, and the rapid extension of flourishing flocks in the northern part of Queensland, which is within the tropics, is an undeniable fact—though the farthest successful limits where sheep can flourish has not yet been ascertained. Mr. Brodribb adds, "The settlers in North Australia will, however, have to procure fresh rams every two years from the colder regions, in order to keep up the weight of the fleece; for the animal, while growing older there, will suit itself to the climate. The wool will retain its fineness but not its weight; it will be light and open, but will not become *hair* as was asserted."

months, gives us as perfect a conception as can be obtained of the nature of the climate, productions, and natives of that intertropical tract. In one part of these notes he says, and Mr. H. Gregory confirms him, that in no part of the world had he seen grass grow so luxuriantly. As to climate, he affirms, after giving tables of the mean temperature for ten months of the year, that, although the maximum temperature in the shade was 106°, and the minimum 47°, the health of the travellers and the animals of the expedition was by no means impaired. Surely, with such statements as these before us, theoretical objections to the selection of chosen parts of North Australia as the sites of British communities ought to cease.

In opposition, however, to these data and the inference to be derived from them, it has been argued that, inasmuch as tracts at about 15 degrees north of the equator, in the peninsula of India and other places in the Indian Ocean, are from their great heat unsuited to European settlement, such must also be the case in like southern latitudes in Australia. But this reasoning seems to me to fail when we consider the distribution of heat over the surface of the globe, according to the law which regulates isothermal lines. Thus, whilst the Indian Ocean is necessarily the source of warmth to the Indian peninsula, the enormous breadth of table-lands with their gum-trees in North Australia must to a great extent cool the temperature, and thus bring about a more moderate climate than on a similar parallel to the north of the equator, where water so vastly predominates over land.

Viewed in this way, theory accords with the facts ascertained by our explorers, who, surmounting all difficulties, have laid open practicable routes across the continent, and have shown us that North or Tropical Australia can be colonised successfully. Moreover, as Sir H. Barkly well observes, "the Australian air is so comparatively dry even within the tropics, and the forests of gum-trees so free from jungle, that the climate is far healthier and more endurable by European constitutions than in similar low latitudes in other portions of the globe." *

These recent discoveries have further dispelled those theoretical speculations in which, in common with many geologists and physical geographers, I confess I at one time indulged, as to the vast and continuous extent of internal deserts in Australia. From such desponding views I am now relieved; and I congratulate Governor

* Despatch to the Duke of Newcastle, 21st August, 1862.

Gawler and others, who sagaciously contended, that vast interior districts of rich and fertile lands would be found, to compensate for barren intervening tracts. But, whilst in my Address of 1858, I suggested reasons for scepticism as to the extent of rich interior lands, I said that it would ill become the President of this Society to damp the ardour of those researches by which alone the question could be settled; and I expressed a hearty wish that the Colonists might be gratified, as they have been, by the discovery of such large rich *oases* in the interior. Nothing, in short, in our age, can be more cheering to the geographer than by taking in hand the Map of Australia published by Arrowsmith in 1842, and contrasting it with one on which our excellent cartographer can now insert all the mighty additions which the explorations of the last twenty years have enabled him to make.

In concluding these remarks on the wonderful extension of geographical researches in this continent, let me say that the progress which our enterprising Colonists have made, not only in wealth and material prosperity, but in all that can dignify a people, was strikingly manifested at the last great International Exhibition. In it we saw collocated, not merely the rich natural products of gold and copper, with admirable pictorial views which even enabled us to imagine that we had visited the mines of our antipodes, but we also had before us solid proofs in the publication of excellent Maps and the Catalogues of the valuable Libraries of Sydney and Melbourne, that there is scarcely any branch of knowledge or of industry which is not cultivated in Australia with a zeal rivalling that of the mother country.

Relying on the conversations which it was my privilege to hold with the distinguished men who represented the several Australian colonies on that occasion, as well as with personal friends who have long resided there, I feel assured that there are no people in the wide dominions of Britain more attached to their Sovereign and our Constitution than the Australians. It has always, therefore, been a source of pain to me, when some persons have spoken or written of the coming of the day when these great Colonies are to be separated from us. Seeing no cause for such separation, and believing that our Government and Legislature are much too enlightened to commit the error into which our ancestors fell when Britain lost her North American settlements, we are, I rest satisfied, never likely to estrange our Australian colonists by similar treatment. It has been well said by a late Governor of

South Australia that the loyalty of Australia is an homage to the enlightened rule of England, of which her statesmen may be proud.* On my own part, I am indeed persuaded that, if judiciously and considerately treated, Australia, which affords by far the finest possible field for the emigration of our superabundant population, will long continue to be a source of wealth and strength to the mother country; and will, I trust, for ages hold out a proof that the people who live under a constitutional monarchy enjoy much truer freedom than those who have formed part of any democracy, ancient or modern.

In terminating the preceding sketch of the labours of recent explorations in Australia, I have to express my regret on one point only. I cannot learn that any of the recent travellers have determined the relative altitudes of the tracts they traversed, after the manner pursued by the indefatigable Mitchell in all his surveys. For, whilst I know that Stuart, Landsborough, and McKinlay could not possibly devote sufficient time to any one district they traversed, to delineate all its physical features with the accuracy of the accomplished Mitchell, still with a thermometer only and the boiling water which they had at every camp, approximate heights could easily have been ascertained. If such approximate levels of the country had been registered, our knowledge would have been greatly increased; and our practical geographers would have had the means of laying down on their maps the river systems and drainage of the vast interior.

New Zealand and its Gold.—It is not my province to enter on this occasion into a general review of the progress made in these fine islands in agriculture, mining, trade, and new settlements. I will simply advert to the great stimulus which has recently been imparted to this southern colony by the discovery of gold. As I have no precise information respecting the amount of gold which is yielded in other parts of these colonies, I confine the following few sentences to the auriferous product of Otago. Whilst my friend Dr. Hector has been occupied in tracing out the boundaries of the rock formations of this province, or the Scotch colony, and has been analysing the specimens of earths and ores of the newly-settled parts of it, we learn from the elaborate report of Mr. Vincent Pyke, the Commissioner of the gold-fields, some highly interesting particulars.

* See the Lecture, "Australia: what it is, and what it may be," by Sir Richard G. MacDonnell, C.B., Dublin, 1863.

Although no systematic search for gold was made until 1861, the discovery of the Tuapeka gold-fields attracted workmen and speculators from other parts of the islands, as well as from Australia; so that the revenue of Otago, *mirabile dictu!* was quintupled in one year, having been raised in that short time from 33,500*l.* to 161,744*l.* At the date of this report, 1st October, 1862, we find it stated that, independently of undeveloped tracts, "a continuous gold-field may be said to extend in a general northerly direction from Tokomairivo to the valley of the Upper Clutta, a distance exceeding 100 miles."*

As far as examination of the auriferous region has extended, it would appear that the gold is chiefly found in the younger tertiary deposits, which are made up of the detritus of the subjacent old slaty and quartzose rocks. The latter rarely protrude to the surface in Otago, and do not form, as in Victoria, the visible and striking gold-bearing backbones of the region, into which the miner may penetrate in search of the ore when the gravel, sand, and detrital accumulations shall have been dug out or exhausted. It would appear that, in Otago, these older or original matrices of the gold (my Old Silurian rocks) are much covered up by the tertiary or alluvial accumulations in which the gold is disseminated, and in many parts the hills are covered even to their summits with rich black earth. Hence it follows that, although there may be auriferous detrital matter sufficient to enrich the colony by diggings for many a year, and that the colonists may now only see the beginning of their rich golden harvest, still it would appear that they have not as yet before them the same hopeful prospect of a stout and permanent staple like that of Victoria in the outcrop of the original matrices of the gold-bearing slates, into which they may drive shafts and mines.

Whilst the recent discovery of coal in the western part of Otago is also of much importance to the colony, this region of New Zealand has also become most interesting to the naturalist by the report that the gigantic bird, the Moa,† whose bones excited much interest when so admirably described by Owen, is still living there. In

* See Otago Provincial Gazette, November 26, 1862, No. 217.

† My eminent friend, Mr. John Craufurd, informs me that Moa is the name given in the great Polynesian language to the common fowl in the tropical islands of the Pacific which possess it, and seems to have been bestowed on the gigantic bird by the Maoris when they emigrated to New Zealand. In the Polynesian, the generic term for "bird," manuk, is taken from the Malay, and is found in the dialect of New Zealand.

early days these gigantic birds were masters of the lower, richer, and more accessible regions of these islands. Then came human beings, Maori, from other regions, who killing and eating this noble game, whose bones have been found mixed up with stone knives and other implements, a few survivors found a refuge in the higher, colder, and more sterile tracts of the south. There the persecuted birds might perchance have long remained in solitude, had not the discovery of the precious metal led to a great exodus of miners and speculators, who, having once invaded the wild region, will doubtless soon exterminate the last of the Moas.

Polynesia.—From New Zealand, which was anciently peopled from a part of tropical Polynesia, we may turn for a moment to the clear and animated description of the Fiji Islands, given by Dr. Seemann in his recently published volume, entitled, 'Viti: an Account of a Government Mission to the Vitian or Fijian Islands in the years 1860-61. Acting as botanist and naturalist to the Government expedition under Colonel Smith, which was sent out to inquire into the desirableness or otherwise of colonising these beautiful and fertile islands, Dr. Seemann gives us not only a scientific sketch of their gorgeous vegetation, but also a very lively account of the habits and manners of the natives, a race of the Polynesian negroes, who have only very lately been reclaimed from the cannibalism so strikingly described by Admiral Erskine.*

Africa.—A few weeks only have elapsed since our hearts were oppressed with apprehensions respecting the fate of the Eastern African expedition under Speke and Grant, and by the rumoured death of Consul Petherick, who was *en route* to meet and aid those travellers. I could then scarcely venture to think of touching upon African exploration in my approaching Anniversary Address, so great were my fears respecting the enterprise to which, as geographers, we attached so much importance. Our latest accounts from Speke and Grant had made known to us their position at Kazé, 2° to the south of the Lake Victoria Nyanza on the 30th of September 1861. They had then, after great delays, owing to the infidelity of their porters, who ran off with one-third of their property, just emerged from the wilderness of Mgŭnda M'khalé; while, to complete our depression, a telegram from Alexandria announced that Petherick, after the loss of his stores, had perished in passing to the west of the White Nile. What then was our joy when, after a long and

* 'Cruise among the Islands of the Pacific.'

painful interval of suspense, a first telegram from Alexandria gave us the grateful news that Speke and party had reached Khartûm; while a second, quickly following, bore from Speke to myself the pithy words, "The Nile is settled!" Then came the cheering intelligence that Petherick was not only alive, but had actually joined Speke and Grant at Gondokoro on the 20th of February last; and, finally, we have been furnished with the journal of the travellers, with a map of the region they explored, illustrated by the determination of many points of latitude and longitude in regions hitherto wholly unknown.

Whatever might have been our recent forebodings respecting the success of the explorers from the east and south, who had met with obstacles unknown to Burton and Speke in their former traverse of that central region, I never, on my own part, gave up the hope that, like many a previous African traveller supposed to be dead, Consul Petherick would still be found in life. Owing, however, to his disasters on the White Nile, and the loss of his stores, our agent—who had been liberally supplied with money by us, with a view to succour Speke and Grant when they were struggling to get through a tract where we apprehended that their greatest difficulties would occur—could afford them no important assistance when he joined them at Gondokoro. This is the place, as you will recollect, beyond which the Dutch ladies had reached in their steamer; and had our travellers arrived there some weeks earlier they would, doubtless, have not only been well cared for by these adventurous ladies, but would have been so rapidly carried down by steam to Khartûm that before now we might have had them among us. Real and substantial succour had, however, before Petherick's arrival, been brought to the expedition by that gallant, devoted, and enterprising explorer Mr. Samuel Baker, who, having heard of Petherick's disasters, had fitted out at his own cost a separate expedition, in which he was determined, if he could not relieve our explorers, at all events to try to follow the White Nile to its real sources. Mr. Baker—distinguished formerly by his exploits in Ceylon, and in the preceding season by his researches in the districts north of Abyssinia, also by defining the position and peculiar hydrographical conditions of several affluents of the river Atbara, previously quite misapprehended by geographers—had made up his mind to pass the equator in his southward search after the missing travellers. Pursuing his route to Gondokoro, he was the first to meet the long

absent parties, and to supply them with money, provisions, and boats. The cordial thanks of our Council have necessarily been voted to Mr. Samuel Baker for his noble conduct; and, as he has now gone off to the south-west in the hope of tracing the extent of a lake on the west, laid down by Speke in his map as the Luta Nzigé, and intending to devote a year to this enterprise, we may confidently hope for a satisfactory solution of this collateral question of the source of a great feeder of the White Nile in a higher latitude. Let it also be recollected that Mr. Baker is not merely a daring explorer, a good naturalist, and a first-rate sportsman, but is also a good geographer, having already made, as I learn from a letter addressed to his friend Admiral H. Murray, numerous astronomical observations fixing the positions of rivers and places.

But, whatever may be in store as to future discoveries, let us, in the mean time, dwell with delight on the grand achievement of Speke and Grant, who, by traversing a region never previously explored by civilised man, have solved the problem of ages; and have determined that the great fresh-water lake Victoria Nyanza, whose southern watershed extends to three degrees south of the equator, is the reservoir from which the sacred Bahr-el-Abiad, or White Nile, mainly descends to Gondokoro, and thence by Khartŭm into Egypt.

In tracing the outline of Speke's recent discoveries, I may shortly recapitulate the nature of the problem that was presented to him when he started on the expedition. His previous journey (1858) (at right angles to the route jointly travelled by Burton and himself to the Tanganyika Lake, and undertaken while Burton lay sick at Kazé) led him into a land where small rivulets began to flow northward into a great fresh-water sea, called the Nyanza, of which he fixed the longitude and altitude, as well as the latitude of its southern end. The lake was bounded to the east by the warlike Masai nation, and to the west by the kingdoms of Uzinza and Karagwé, whilst along the northern shore lay Uganda, Usoga, Amara, &c. Speke's furthest point at the southern end of the lake therefore lay, by astronomical observations, about 480 geographical miles south of Gondokoro, the uppermost well-known point on the White Nile, though the exploration of occasional travellers or ivory dealers—as Peney, the brothers Poncet, and mainly De Bono and Miani—had reduced the distance between the nearest points then known to white men to 400 geographical miles. The assertions of travelled Arabs convinced Speke that the outlet of the lake which

gave birth to the White Nile lay far away in the north, between Uganda and Usoga. Speke's present journey was made to ascertain the truth of such information. His main difficulty was presumed to lie in obtaining the goodwill of the powerful chief of Uganda, who was known to be constantly at war with the king of Unyoro, and of such other native potentates as might otherwise block his way; but no great trouble was anticipated in reaching the lake-district a second time.

Our travellers started from the East African coast on the 1st of October, 1860, but the commencement of their journey was most inauspicious. Eastern Africa was parched with drought, and its tribes were at war with the Arabs trading there in ivory. The result was that they did not reach even Kazé without great delays and anxiety, terminating with illness. The next intelligence was dated September 30, 1861, near Kazé, and told a more cheering tale. The travellers were again on the advance, with a sufficient attendance of porters and interpreters, and were hopeful of success. More than a year then ensued without a particle of news, owing to the wars alluded to, when the joyful information, already alluded to, reached England by telegram. There is a short break in our knowledge of their proceedings in the mean time; for Speke sent a despatch by way of Zanzibar, which has never reached the Society. His present reports contain a consecutive narrative of the last and principal part of his journey between Karagwé and Gondokoro. Grant having been left behind sick, Speke commenced on January 1, 1862, his departure from the capital of a kingdom called Karagwé, that abuts by one of its corners against the west shore of Nyanza, at its southern end. Here he seems to have made a most favourable impression on the intelligent King Rŭmanika, who gave him friendly recommendations to the powerful King of Uganda. Karagwé is a portion of a peculiarly interesting district. It occupies a shoulder of the eastern watershed of a territory 200 miles broad, and some 6000 feet above the sea-level, studded with detached conical hills, one of which attains the height of 10,000 feet at least.

Two sources of the Nile rise in this territory—namely, the Kitangŭlé River, which is the chief feeder of the Nyanza Lake, and probably that of another Lake, the Luta Nzigé. So, probably, also does the source of the Shirè of Livingstone, if we may believe the reports now brought to us by Speke; for it is believed that the Tanganyika Lake is emptied, and not supplied, by a river at its southern end, and that this affluent feeds the Nyassa Lake, and through it,

of course, the Shirè. The northern feeder of the Tanganyika is supposed to take its rise in the land of which we have been speaking..

It is evident, from a part of the present reports, that the missing papers would have enlarged on the fact that in Karagwé, Speke found himself in contact with a superior caste, strongly and favourably contrasting with the negro tribes he had previously seen, and that Uganda, whither Speke now went, was ruled over by a similar race. Their country lies along the Nyanza, and occupies a full half of both its western and its northern shores. The parent stream of the Nile bounds Uganda on the east, as it issues from the middle of the northern boundary of the lake with a stream 150 yards in width, leaping over a fall of 12 feet in height. The Nyanza is said to have other outlets from the same shore, which all converge upon the Nile, and feed it at various points of its course extending to a distance of 150 miles from the lake. The north shore of the Nyanza is parallel to the equator, and about 20 miles north of it.

Our traveller conceives the lake to have formerly extended over a greater area than at present. Its banks are intersected at frequent intervals by streams which he calls "rush-drains," apparently small half-stagnant watercourses, which drain that portion of the adjacent land which he believes to have been formerly flooded by the lake. The present size of the Nyanza is considerable; it is about 150 miles in length and breadth, but it appears to have no great depth.

Speke further learnt that other lakes have a share in feeding the Nile. One of them, Baringa, lies immediately to the east, connected by a strait with the Nyanza. It supplies the Asŭa River, which runs into the Nile just above Gondokoro. The other is the Luta Nzigé, to which we have already alluded, and which Mr. Baker was to proceed to examine. Captain Speke never saw it, but pictures it on his map as being annexed to the Nile. The river enters it, after making a great bend, at the easternmost part of its northern shoulder, and re-issuing at the westernmost part of the same locality. This lake lies 120 miles north-west of the northernmost part of of Nyanza.

The people of Uganda are described as "the French" of these parts, from their sprightliness and good taste in behaviour, dress, and houses. Their ruler, who is absolute in his power, fortunately showed great kindness and even affection for Speke. He knew confusedly of the navigation of the White Nile by white men, and had occasionally received their goods in form of presents brought by the northern negroes. He was exceedingly anxious for the establish-

ment of a trading route to Gondokoro, but northern tribes blocked the way.

Speke was detained five months at Uganda whilst waiting for Grant's arrival, owing to the attachment this youthful king formed for his white visitor, who taught his majesty the art of shooting and various other accomplishments, and thus gained much influence at the sable court: his movements were narrowly constrained, to satisfy the king; but he finally gained the ever-doubtful passage to the north, and thence he was passed on to the next kingdom, that of Unyoro, still inhabited and ruled over by the same peculiar Wahuma race, but by a far less advanced portion of them. North of Unyoro the South African family of languages, which had been universal thus far, suddenly ceased to be used, and the northern dialects took its place.

Hitherto Speke had had no trouble about interpreters; for one tongue was understood more or less by persons in every kingdom he passed through. Henceforth he could not advance without Unyoro interpreters. The people, too, were far more barbarous. He saw strangers among them who lived, when at home, in absolute nudity. At Unyoro they adopted a scanty dress, out of deference to the customs of the Wahuma. The procrastination of the King Kamrasi, and the troubles of the travellers when they were getting to the end of their journey, were most annoying; the barbarian succeeding in taking from them their only remaining chronometer. They contrived, however, to escape and to follow the Nile for 120 miles north of the great lake, or to lat. 2° N. There the river falls rapidly and makes its great bend to the west, to pass through the Luta Nzigé Lake, and Speke was obliged to travel along the chord of the bend, a distance of 70 miles. They again struck the river at De Bono's ivory station, in lat. 3° 10′ 37″, and found they had descended 1000 feet.

A large body of Turks (ivory traders) were the only occupants of the station when the travellers arrived, and they welcomed them cordially. After some days, the camp broke up, and they all marched to Gondokoro. They passed, in north latitude 3° 35′, the tree on which the Venetian Miani had cut his name to mark the extreme point to which that traveller had penetrated. The Turks compelled the Bari natives to contribute porters; and I am sorry to add that the narrative fully confirms the universal accounts of the inhuman treatment of the natives by these Turkish traders. Our travellers reached Gondokoro on the 15th of February, and there met Mr. Baker.

In his retrospect of the more civilised countries he had visited, namely, the three kingdoms of Karagwé, Uganda, and Unyoro, Speke unhesitatingly gives the preference to the first-named, inasmuch as the King Rumanika is described as a person of character and intelligence. M'tese, the sovereign of Uganda, is an amiable youth, surrounded by his wives, and delighting in field sports; while one of the rules of his court would seem to require the execution on an average of one man per diem for the good of the State. The northernmost of these three kings, to the north of whose dominions language wholly changes, is described as a morose, suspicious, churlish creature, yclept Kamrasi, whose chief occupation was the fattening of his wives and children till they could not stand, and in the practising of witchcraft. Our travellers spent a whole year in getting through these three kingdoms, in no one of which had a white man ever been seen before; nor would our friends, in all probability, ever have escaped from the royal clutches had they not supplied their majesties with numerous presents, and had not the kings eagerly desired to open a traffic with the whites.

The question of the sources of the Nile has occupied geographers and travellers from the remotest periods of history; and when we come down to the period of the Romans, we learn from Seneca that Nero sent up two centurions to settle it, but the Roman captains returned without accomplishing what our two countrymen have effected. Lucan, indeed, in his 'Pharsalia' makes Julius Cæsar speak thus at the feast of Cleopatra :—

> "Sed cum tanta meo vivat sub pectore virtus,
> Tantus amor veri, nihil est quod noscere malim
> Quam Fluvii causas per secula tanta latentes,
> Ignotumque caput: spes fit mihi certa videndi
> Niliacos fontes; bellum civile relinquam."

It is not, therefore, for us only as geographers to rejoice on this occasion; but our country should be proud of such a feat as has been achieved by the two gallant officers of the Indian army; and I have no doubt that when the recitals of their toils and journeys are made known, as well as their graphic description of interior native kingdoms of whose names we never heard, they will be greeted with the same approbation of the public as that which was so justly bestowed on my valued friend Livingstone after he had traversed Southern Africa. Let us hope that Speke and Grant may reach these shores before the last day of meeting, on the 8th of June; but should this not occur, the Council of the Society

have already authorised me to call a special meeting, in order that we may gratify the public, and do honour to ourselves, by having their precious discoveries communicated to the Society by the authors in person.

In the mean time it is highly gratifying to know that our Authorities at home have been prompt in offering to these distinguished men every requisite succour. Earl Russell, with the same alacrity as when he assisted Lieutenant (now Captain) Pim to traverse Siberia in search of Franklin, has transmitted a sum of money in aid to Alexandria. The Oriental and Peninsular Company have liberally granted a free passage to Aden or Bombay to the twenty-three black attendants of the explorers; for without such assistance the poor creatures could never have reached their homes near Zanzibar. Again, the Secretary and Council of India have, at our request, at once extended the leaves of absence, with Indian pay, of Captains Speke and Grant to the 1st of July, 1864, in order to free them from embarrassment, and enable them to publish full accounts of their researches. In communicating this circumstance, and in authorising me to send the news by telegram to Alexandria, our Associate, Mr. Under-Secretary Merivale, thus writes: "I wish the telegraph could also conveniently carry the expression of our Indian satisfaction at the great achievement which these officers have performed, and our pride that we, the Indian Service, have beaten Julius Cæsar." I may here state, that the telegram I sent to Alexandria on Thursday was answered on Saturday by Mr. Saunders, Her Majesty's Consul at Alexandria, in these pithy words:—"Speke and Grant reached Thebes and Kineh.—Telegram of Leaves just received here." As, therefore, our travellers are now far below the Cataracts, and in steamers of the Viceroy, we may very soon welcome them at home.

When the full narrative of this expedition is laid before the public, you will then have to peruse a most graphic, and in many parts an amusing account of the customs and habits of various peoples of whom we never heard before, and of the character and power of kings, to traverse whose dominions required such a continual exertion of tact, vigilance, and resolution, as have proved the leader of the expedition to be as good a diplomatist as he is a gallant soldier. Looking at Speke only as a practical geographer, we of this Society owe deep obligations to him. For he has determined by astronomical observations the latitude and longitude of all the important sites which he visited; and, in transmitting these to us, accom-

panied by a variety of meteorological data, has expressed a wish that these should, if possible, be calculated and compared by competent authorities before he reaches England, and before his map is published. On this point, I am happy to say, that Mr. Airy, the Astronomer Royal, has, with his well-known love of our science, undertaken the important task.

When delayed in the interior, Captain Speke occupied his leisure hours by writing a history of the Wahuma, otherwise (as he believes) Gallas, particularly in reference to the portion of that nation that crossed the Nile and founded the large kingdom Kittara, which is bounded on the south by the Lake Victoria Nyanza, and its affluent the Kitangŭlé Kagera; on the east by the Nile; on the north by the river-lake Luta Nzigé; and on the west by the kingdoms of Utumbi and Nkole. These names, as well as those of the kingdoms of Karagwé, Uganda, and Unyoro, were only made known to geographers by hearsay from Arab merchants in Speke's first journey; while no historian has heretofore heard of the dynasties which Speke enumerates, among whose kings we read of Ware the 7th and Rohinda the 6th, while one of the descendants of these sovereigns is at present found possessed of from 300 to 400 wives.

Not wishing, however, to do more on the present occasion than to stimulate your desire to listen to a fuller narrative at a future meeting, I must be permitted to read the very words of Speke, when, at the end of the long pilgrimage of himself and his companion, he fell in at Gondokoro, on the 15th February last, with Mr. Samuel Baker, who was travelling onwards to assist him. "The meeting," says he, "of two old friends suddenly approaching one another from opposite hemispheres, without the slightest warning, can be better understood than described: we were intoxicated with joy, though my good friend had inwardly hoped till now to find us in some fix from which he might have relieved us. Baker had one *dyabia* and two smaller vessels, stored with corn, which he at once placed at our disposal. He also lent me money to pay the way to Cairo, and finally supplied our *dyabia* with many little delicacies for our comfort. He was our saviour, if not in the interior, at any rate on the Nile." Nor can I here omit to notice the paragraph in Speke's first letter to myself, in which he says, "I may safely say I never felt so rejoiced as when Petherick delivered your letter announcing that the Royal Geographical Society had awarded to me the Founder's Medal."

The determination of the reservoir from which the Nile flows will enable us to speculate with more certainty than before on the regular periodicity of the rise of this stream in Egypt; and which is now generally attributed, not to the melting of the snows of the higher chain to the east, but, in far the greater part, to the fall of the equatorial rains on the interior spongy upper basins, which, when supersaturated, must fill to overflowing the lakes into which the waters pass, the periodicity being determined by the passage of the sun over the equator. And here I cannot but observe that if there be any persons who adhere to the old-fashioned erroneous belief that the interior of Africa is a mountainous sandy desert, from which the sources of the Nile are derived, the discoveries of Burton and Speke, and of Speke and Grant have as completely dispelled the illusion respecting the equatorial latitudes, as the journey of Livingstone put an end to a similar false hypothesis in the southern part of this great continent.

Modern discovery has indeed proved the truth of the hypothesis, which I ventured to throw out to you eleven years ago, that the true centre of Southern Africa is a great elevated watery basin, often abounding in rich lands; its large lakes being fed by numerous streams from adjacent ridges, and its waters escaping to the sea by fissures and depressions in the higher surrounding lands. It was at our anniversary of 1852,* when many *data* that have since been accumulated were unknown to us, that, in my comparative view of Africa in primeval and modern times, I was led to suggest that the interior of that continent would be found to be such an unequally elevated basin, occupied now, as it was in ancient geological periods, by fresh-water lakes, the outflow of which would be to the east and to the west, through fissures in subtending ranges of higher mountains near the coast. While this theory was clearly verified in Southern Africa by Livingstone in the escape of the Zambesi, and is well known to be true in the passage of the Niger, through deep rocky gorges, so does it apply to the Nile, in as far as the great central lake, Victoria Nyanza, is ascertained to occupy a lofty plateau 3,500 feet above the sea. Again, as the southern end of this lake extends to the water-parting between North and South Africa, and in its range northwards is only fed by small lateral affluents flowing from the flanking higher grounds, so the waters issuing from the northern end of the Lake Victoria Nyanza, and, forming the White

* President's Anniversary Address 1852, vol. xxii., p. cxxi.

Nile, take advantage of a series of depressions, through which they descend in a succession of cascades. The uppermost of these cascades, close to the lake, has been named, after my predecessor (now Earl de Grey and Ripon), "The Ripon Falls." Thenceforward, the White Nile, fed by other affluents as it flows to the North, has a descent of 2,400 feet, when it reaches Khartŭm, which is itself 1,100 feet above the sea. The general course of the Nile, from south to north, and its peculiarity as a stream, in having no affluent between the Atbara River and the sea, a distance of 1,700 miles, has been in the first instance dwelt upon by the great Abyssinian traveller, Bruce, and has since been ably illustrated by Sir Henry Holland.* The phenomenon of its being confined to this northward course is due to the fact, that the flanking higher grounds, ranging from south to north, do not afford, as in Southern Africa, lateral valleys which lead to the sea. The other generalizations which have been established by Speke and Grant, independently of the true source of the White Nile, are—

1. That the hypothetical mountain-chain, which has been called the "Mountains of the Moon," and which on old maps has been represented as traversing the equatorial regions of Africa from east to west, exhibits no such range. According to Speke, the only high land seen was simply a separate interior cluster of hills, from which descend some small western feeders of the Lake Victoria Nyanza. In fact, these mountains seem to occupy the higher part of the central watershed between North and South Africa. Now, as they supply the Victoria Nyanza, and, consequently, the Nile, with some of its western waters, they may also send eastern contributions to the river Congo. To the south there seems little doubt indeed but that their waters flowed into the Lake Tanganyika of Burton and Speke, and thence into the Nyassa of Livingstone, as had been, indeed, inferred, on what seems to me sound reasons, by Mr. Francis Galton.†

2. That the inhabitants of the kingdoms of Karagwé and Uganda, in the central and equatorial parts of Africa, are much more civilized and advanced than the people who live to the north, on the banks of the Nile, between the Lake Victoria Nyanza and Gondokoro, the latter being for the most part those naked barbarians, probably the

* Edinburgh Review, Oct., 1854. Alluding to the mysterious unsolved problem as to the true origin of the Nile, Sir H. Holland then justly said, that "the man who makes the discovery will perpetuate his name to all future time."

† See Earl de Grey and Ripon's Anniversary Address, 1860, p. clx., "Africa."

anthropophagi of Herodotus, who have doubtless been the real impediments during all ages to explorations up the stream, or from north to south.

3. We learn that some acquaintance with the language of the natives on the east coast enabled the travellers to hold converse with many individuals in all the tribes and nations they passed through until they reached the above-mentioned northern barbarians, whose language is quite distinct from any dialect of Southern Africa.

4. From the notes of Speke on the geological structure of the countries he passed through, I infer there is little or no hope of any portion of those regions proving to be auriferous. I direct attention to this fact; since an erroneous notion has crept into the public mind, derived probably from the possibly gold-bearing character of some mountains extending southwards from Abyssinia, that a gold region existed near the sources of the Nile.

In this Address I cannot pretend to do justice to the writers from the early days of Herodotus to the later period of Ptolemy, as well as to many modern authors who, referring to those ancient works, or obtaining information from natives, have assigned the origin of the Nile to lakes in the interior of Africa.* We are told by Cooley, in his 'Geography of the Great Lake of Southern Africa,'† "that above three centuries have elapsed since accounts of a great sea in the interior of Africa reached the Portuguese settlements on both sides of that continent." It is probable that from this information was constructed the old map of the sixteenth century, which exists in the library of the "Propaganda Fede," in Rome, and in which the Nile is represented as issuing from an equatorial lake.‡ Already in 1518, adds Cooley, we find it stated as a fact, learned from the natives of Congo, that the River Zaire rises in a lake in the interior, from which issues in another direction another great

* Colonel Sir Henry James informs me that in Lelewel's 'Géographie du Moyen Age' (Brussels, 1830), there is a map taken from the Arabian work called 'Rasm,' which map was copied by Abu Diafar Mohammed Ben Musa, A.D. 833, by order of the Calif Almamoun. This map is therefore upwards of 1000 years old; and on it the source of the Nile is represented as being in a lake called "Kura Kavar," situated on the Equator, an island in it being represented as in longitude 32° 40′ E. This agreement to so great an extent with modern discovery is truly remarkable.

† Journal of the Royal Geographical Society, vol. xv., p. 185.

‡ A small copy of this large map taken by Lieut.-Gen. Jochmus von Catignola is in our Apartments. In a letter from Rome, dated July 3rd, Monsignor F. Nardi, Prelate of the Pope's Household, informs me that this fine and large old map was constructed by one Jerome Verrazano, probably a brother of the celebrated Florentine geographer John Verrazano, who was sent out by Francis I., King of France, to explore a part of North America.

river, presumed at that time to be the Nile.* Again we learn from the same learned, critical geographer, that De Barros tells us of the great lake in the centre of Africa, "whence issue the Nile, the Zaire, and the great river, the branches of which encompass Benomotopa, besides many others that are nameless." † Such information, gleaned from native sources, it has been reserved to our times to verify or disprove by actual observation. The one or more great lakes of the old authors have now been separated by explorers into several great water-systems; and it is to that of the White Nile, as fed by the great reservoir of the Lake Victoria Nyanza, that our present attention is called.

And here we must give due credit to our Abyssinian medallist, Dr. Beke, who, in the year 1848, threw out an original hypothesis ‡ respecting the sources of the Nile, which the journey of Speke and Grant has proved to be substantially correct; § and on which he has dilated at the meetings of our Society, and in letters to myself.

It is not my province to enter now into a general discussion on the relative merits of the writings and maps of critical geographers upon Africa, nor to endeavour to show how in the south-east the recent observations of Livingstone may have substantiated or modified the ingenious views of Cooley, the practical sagacity of Arrowsmith, or the laborious analyses of Macqueen. The source of the White Nile is the question before us, and on that point we know that, when (1858) he was associated with Burton, Speke discovered and named the great Lake Victoria Nyanza. Nay, more, he assured

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* Fernando de Enciso, Suma de Geografia.

† Asia, Decad., l. xi.

‡ Transactions of the Sections of the Brit. Association, 1848, p. 63.

§ In this Address, delivered on the 25th May, which, hastily written, was printed in the *Times* of the following day, there are *errata*, particularly in reference to the writings of Mr. Cooley and Dr. Beke, which I have endeavoured to correct in the text. As respects Africa, my main object was to convey a clear and popular view of the journey of Speke and Grant. I am aware that various opinions prevail among sound critics on the geography of the interior of Africa; and I profess to be wholly incompetent to side with Cooley, Lacerda, and Pigafetta, or Burton, on the one hand, or with Macqueen or the other African authorities, such as Beke, Erhardt, Speke, &c., on the other. On the following points of comparative geography, however, I must do Mr. Cooley the justice to say, that he has satisfied scholars that the Blue Nile was *the* Nile of the ancients (though we now know that it is merely an affluent of the much greater White Nile)—that Greek geography can be traced with certainty to Palta on the east coast of Africa, and, as stated in the text, that the Mountains of the Moon do not belong to the genuine text of Ptolemy. (See Dr. Smith's Ancient Geography). Though unprepared myself to go into the relative merits of our African critical geographers (not forgetting the Inner Africa of Cooley and his original Map, the Memoirs and Maps of Macqueen, Beke, and others), I should wish to see clear abstracts of their writings placed before us in a future Number of our Proceedings; for such a repertory would be highly interesting, and also useful to practical geographers and explorers.

us, in 1859, when he determined its position, that it would prove to be the true source of the Nile; and that problem of ages he has striven to settle by personal survey. For all the speculations of geographers as to the main source of the Nile remained to be confirmed or set aside by actual observation.

As to the "Mountains of the Moon," they are, according to Cooley, an Arab interpolation, and do not belong to the genuine text of Ptolemy, Amedi, &c. Amid the mountains of tropical Africa, we may hesitate to apply that designation with Burton to the group which Speke views as such, *i. e.*, w.s.w. of the Lake Victoria Nyanza; or, on the other hand, to agree with Dr. Beke in considering as such a north and south chain on the east, which, as he supposes, may unite the lofty peaks of Kilimanjaro and Kenia with mountains in Abyssinia. Even those two views need not exhaust this prolific subject of theory; while they and other speculations may serve geographers a good turn as useful stimuli to future explorers.

In dwelling on the fact that all efforts to ascend the Nile to its source have failed, I must do justice to those geographers who have shown the way as to the desirableness of exploring the interior of Africa from the coast near Zanzibar and Mombas. First, I have to record that in the Session of 1838-9, Captain W. Turner, R.N., suggested to our associate Mr. W. Bollaert and the late Captain Ormsby of the Indian Navy, that the three should go to Zanzibar, thence to explore the country to the great lakes then called *Maravi*. Their plans were submitted to Mr. Cooley, who even wrote out a list of instructions, whilst the Royal Geographical Society as well as the Government offered assistance. This expedition was put an end to by the employment of both the naval officers; and Mr. Bollaert most unwillingly relinquished the project, and went to Texas to explore portions of a country, the regions to the south of which he has since so well described. Next we have to bear in mind the efforts of those enterprising German missionaries, Krapf and Rebmann, who, advancing from Mombas to the foot of the great mountain Kilimandjaro, announced the startling phenomenon that these very lofty mountains, though under the equator, were capped by snow. The truth of this observation has since been completely realised by the very remarkable actual survey of Baron C. von Decken when accompanied by the able geologist Mr. R. Thornton, as well as by subsequent ascents by the former to the height of 13,000 feet. Then Erhardt read a memoir before our Society, illustrated by a map compiled by himself and Rebmann, of a vast tract of Eastern Africa. It was

based on numerous caravan routes and included an enormous lake stretching from the Equator down to the lake Maravi. Next, our associate Colonel Sykes earnestly advocated the operating from Zanzibar,* as an excellent base for all geographical researches in the adjacent continent. I must further state that, as early as 1848, Dr. Beke projected an expedition to the Zanzibar coast, of which Dr. Bialoblotsky was to be the leader. As great prejudices then existed against these suggestions, on account of the supposed inevitable loss of life to any European who should sojourn there, the more have we to thank those of our associates who advocated a line of research, which has led first to the expedition of Burton and Speke, and eventually to the actual discovery of the source of the true White Nile.

I may also say, with no small pride, that from first to last the Council of this Society has vigorously sustained African expeditions, whether in southern or northern latitudes; and I am well entitled to state that in the absence of our persistent representations to Her Majesty's Government, for whose support and countenance we are indeed deeply grateful, the discoveries of Livingstone, and of Burton and Speke, and the great recent discovery of Speke and Grant, which now occupies our thoughts, would not have been brought about in our day.

The introduction of a small steam-vessel on the waters of the White Nile has enabled a party of lady-tourists to effect its navigation, with an ease that astonishes those who had experienced the grievances of the usual means of transport. Not only was the time of passage reduced to a small fraction of its former amount, but the rapid and independent movements of the steamer withdrew her passengers from the risk of those native hostilities which had become a serious danger to the navigators of the White Nile. At the same time that Mr. Baker, warned by the universal experience of the ivory-traders and previous travellers, had pointed out the necessity of a powerful escort to secure ordinary safety, the three ladies, Madame Tinné and her daughter, and her sister Madame van Capellen, steamed in their little vessel to Gondokoro, and beyond it, with a scarcely more numerous attendance than would have assured their personal comfort in the most civilized parts of Egypt.

The energy of these ladies, the daughters of the celebrated Dutch Admiral van Capellen, the coadjutor of Lord Exmouth at Algiers,

* See Journal of the Royal Geographical Society, vol. xxiii. p. 101.

induced them to extend their voyage up the Sobàt, which they describe as a river of importance only during the period of high waters. We had previously been gratified with their lively accounts of the country even to the south of Gondokoro; and we have recently heard of their making a new expedition from Khartûm to the Bahr el Ghazel, in the hopes of penetrating some of the affluents of that great mere. They were at the same time doing an additional service to geographers by conveying the exploring party of Dr. Heuglin to their point of departure from the shores of the same lake. I have twice called the attention of the Society to the exploits of these ladies, the youngest of whom, Miss Alexine, is a naturalized Englishwoman: I will only repeat what I have said at one of our Evening Meetings, that they well deserve to be honoured in an especial manner by the Royal Geographical Society. Dr. Heuglin has already thrown great light on the geography, in its widest sense, of the northern parts of Abyssinia; and the linguistic studies of his original colleague Dr. Munziger have resulted in the collection of eight new vocabularies.

Little is known with certainty of the result of Von Beurmann's endeavour to penetrate Wadai. He appears to have reached Lake Tsád, and there to have awaited permission to proceed. Further rumours have reached Bengazi; but intelligence of a definite character is anxiously waited for.

M. Jules Gérard has sailed to the West Coast of Africa with the object of penetrating Dahomey and Ashanti, and of making such further explorations as opportunity may admit, by passing through the interior to Sierra Leone. The Council of this Society have encouraged his strongly-expressed desire to collect geographical information by the loan of a small but serviceable outfit of instruments. They have also furnished him with instructions in respect to the routes by which, in their opinion, he might most profitably travel, but have in no wise become responsible for the expenses of his expedition.

M. Paul du Chaillu has announced his immediate intention of again starting for the Gaboon, now adequately prepared to map his future journeys; and I confidently hope that by the study he has recently gone through, he will be enabled to make accurate astronomical observations, and add materially to the value of his published work which has so much interested the public of England, France, and America. I must add that M. du Chaillu having freighted a ship at his own cost, and having provided himself

with all the requisite instruments and stores, has expended in this generous effort nearly all the money he obtained from the sale of his work, and has therefore our warmest good wishes.

The Baron C. von Decken had again started, and again been foiled in penetrating the interior of Africa by the way of Mombas. The territory of the Masai appears to be absolutely closed to strangers, at least in that direction. The Baron, as before stated, ascended Kilimandjaro to a height of 13,000 feet, where he witnessed a fall of snow, the first that has been seen by any white man, rarely even by a black one, in tropical Africa.*

In general African geography, maps of the whole of the continent, introducing recent discoveries, have been published by Mr. Arrowsmith, and also by M. Ravenstein. The large sheets of Dr. Petermann are all issued, with the exception of those that unite the Lake Nyanza and Gondokoro, which have awaited the results of Speke's expedition. The scale of these charts of Dr. Petermann is sufficient to admit of the insertion of numerous geographical notes and references, whereby it becomes a valuable index to the authorities whence it has been compiled, in addition to its merits as an ordinary map.

Dr. Barth's valuable vocabularies, to which attention was drawn in the last Anniversary Address, are on the point of completion. That able and energetic geographer, who now worthily fills the chair of the Berlin Geographical Society, has published a great

* After the Anniversary Meeting I received a letter from Baron C. von Decken written in the Seychelles Islands, and dated May 12, 1863. This most enterprising Hanoverian traveller was then on his way to Madagascar with the intention of returning to Zanzibar and Mombas, to continue his explorations in Eastern Africa. The object of his letter was to obtain from the British Government some efficient countenance, and a little assistance from our ships of war; inasmuch as the Sultan has been inimical to all his efforts. It appears that Baron von Decken is procuring a steamer of his own, in which he proposes to ascend the river Juba if he can once get his vessel over its dangerous bar. In his last journey Baron C. von Decken was prevented from traversing the Massai country and reaching the northern snowy mountains (Kenia) by that route, and he now intends to ascend one of the rivers which fall into Formosa Bay, *i. e.* the Dana, Osi, or Sabalki, and the Juba. If he is enabled to proceed 100 or 150 miles up any one of these rivers, he hopes to succeed not only in reaching the Kenia Mountain but also the Lake Baringo and other interesting points. Our German cotemporaries may well be proud of this noble and devoted explorer, who, they may be quite sure, will have the heartiest support of the Royal Geographical Society and its President, and, as I can now add, of Her Majesty's Government. This enterprise of Baron von Decken will, if successful, throw a clear light on the relations of all the eastern affluents of the Victoria Nyanza and White Nile, of which Speke has brought us home knowledge as derived from the natives. In the mean time, Captain Speke is decidedly of opinion that the Kilimandjaro snowy peak is separated from the Victoria Nyanza by salt lakes and plains, and throws off its chief waters to the east by the Pangani River. The Kenia snowy northern peak may, however, he thinks, contribute water to the Lake Baringa, and thence by a channel may swell the Nile at the north end of the Lake Victoria Nyanza.—*July* 1*st*, 1863.

mass of information, in a compendious tabular form, which bears on the periods of rise and fall of the rivers of North Africa, and the corresponding state of the rains and winds. The subject is of interest, partly because the means of intercommunication among the natives and their daily pursuits are largely dependent on the condition of their rivers, but mainly owing to the fact of its offering some acceptable glimpses into the hydrology of little known regions.

LIVINGSTONE.—The proofs obtained by Livingstone that the Rovuma was too shallow a stream to be used in commerce were communicated by my predecessor; and a second expedition to that river enabled the indefatigable traveller to ascend that stream in a boat, and ascertain that it has its source in high lands, and not, as was at one time imagined, in the northern end of the great Lake Nyassa.

After his visit to the Shirè River, and his return to the Zambesi, Livingstone had the happiness of being joined by his devoted wife, after an absence of four years; but in three months, alas! she followed the fate of the good Bishop Mackenzie and his Archdeacon. The touching letter of my friend to myself on this bereavement, and which was read before the British Association at Cambridge, in September last, must have deeply affected all those who knew, as I did, how devotedly the great traveller was attached to that excellent woman.

The extraordinary efforts made by Livingstone to get his boat up the tract watered by those falls of the Shirè which he named after myself, followed by his extraordinary labours and courage in ascending that river and the Lake Nyassa, and his subsequent unwearied labours to transport his small steamer in pieces up the banks of the Shirè, where that river descends in cataracts to the Zambesi, as well as the devoted energy of the pious Bishop Mackenzie and his reverend associates, are all to be recorded as proofs of the heroic resolution of our countrymen.

I had, however, been for some time aware that both the Zambesi and its affluent the Shirè were localities little fitted for the stations of Christian pastors, from whence religion might be successfully extended. Whilst the malaria on the banks of the Zambesi renders any residence on them most dangerous, the evidences obtained by Livingstone and his brother Charles, were, that although the higher country up the Shirè was healthier, yet that the various tribes of the inhabitants were continually at war with each other,

a fact of which sacked villages and the frequent bones of the victims of war were the too palpable evidence. Alas! we also know too well that, in the very first efforts to select missionary stations, that excellent man Bishop Mackenzie found himself compelled to side with one tribe against another, and to be thus engaged in actual warfare! Again, I learned with sorrow, that, in Livingstone's efforts to suppress the slave-trade, in the interior, he had been grievously thwarted by the underhand conduct of certain slave-traders, who followed him into tracts which he had opened out, transporting as slaves many unfortunate natives.

Seeing that all these operations, whether missionary or philanthropic, must be carried on by acting from a base where no British colony exists whence real support could be derived, and also referring to the untoward circumstances to which I have adverted, I was quite prepared to learn that Her Majesty's Secretary for Foreign Affairs should have put an end to a Consulate the main object of which was to suppress the slave-trade. However, therefore, we may regret the withdrawal of our energetic Medallist from the scene of his successes, and before the complete exploration of the Nyassa has been accomplished, we who are sincerely attached to him may rejoice in the prospect of welcoming him on his return to Britain, after making such vast additions to our acquaintance with the geography of Central and Eastern Africa—additions which, without his sagacity and indomitable energy and endurance, might not have been obtained in our day.*

Conclusion.

In concluding this Address, I must advert to the changes which take place among our Officers at this Anniversary.

The bad state of health of my distinguished friend General Portlock has, I regret to say, necessitated his retirement from the office

* In reference to what is said above on the subject of Livingstone's explorations, I learn by a letter recently received from him that, instead of returning home, my indefatigable and truth-loving friend has determined to re-ascend the Shirê, and work out the problem of the true source of that stream and his great Nyassa Lake. The British public ought, however, to be informed that in his anxiety to extend his researches—and by so doing check the slave-trade as carried on across the Shirê—Livingstone had expended 6000*l.* of the earnings derived from the sale of his work, in the purchase of a small steamer, intended to navigate that stream. Now, as that sum was of great importance to his motherless children, I earnestly hope that he may be reimbursed, at all events to some extent; the more so as the Consulate, from which he derived only 500*l.* per annum, is at an end. My forebodings as to the helpless state of the University Mission on the Shirê have, alas! been but too fully realized.—July 22, 1863.

of Vice-President. Through the resignation of the post of Honorary Secretary by Mr. Francis Galton, we lose the official duties of a sound geographer, who obtained one of our Gold Medals for his travels in the south of Africa, and who of late has been the able unsalaried Editor of our Proceedings. Though out of office, I venture to hope that he will continue to give us his aid and advice in the Council, particularly as he is the only person in the list proposed who is personally acquainted with the geography of Africa.

In the retirement of the Acting Secretary, Dr. Norton Shaw, the Society is deprived of the services of a zealous and efficient administrator; and the Council have therefore taken the opportunity of marking their sense of the value of his long services in the manner recorded in the Report which has been read to you. I must further do justice to Dr. Shaw by reminding you that, when he was first placed in office, our Members were under 700, and that at present they are about 1800. As I have also taken my share in endeavouring to swell these numbers, and in spreading the reputation of the Society, so am I bound to add that, on every occasion when the sympathies of the public were to be united with our own in any good cause which the Fellows of the Geographical Society had espoused, the energy of Dr. Shaw was conspicuous. Thus, I may particularly cite two Meetings over which I presided. The first of these was the gathering which was called to raise a fund to honour the memory of the gallant French officer Bellot, who was lost in the search after Franklin; the other, the organisation of the great festival given to my dear friend Livingstone on his last departure for Africa. The marked success of both these Meetings was unquestionably due in great measure to the heartiness with which Dr. Shaw urged each project. Again, as the Editor of the Volumes of our Journal and of our Proceedings during many years, he has for a long time been identified with the reputation which our publications have obtained. On these various grounds, therefore, I only do justice to the retiring Acting Secretary, in saying that for such essential services he has obtained our cordial thanks.

In reorganising the Administrative Officers of the Society on a new basis, the Council has deemed it desirable for the permanent advancement of our scientific reputation, that we should follow the system which has been found to work best in the Royal, Linnæan, Geological, and other scientific Societies. The essential change made is, that the two so-called Honorary Secretaries are henceforward to resume the titles of Secretaries (as was the case for many

years after our foundation), and are to act as the efficient Executive Officers, who, under the President and Council, shall transact all the scientific and other business of the Society. On this head I feel quite confident, if Mr. W. Spottiswoode and Mr. R. Clements Markham be, as the Council have suggested, elected to fill these posts, that our best anticipations will be effectively carried out. Under them, the Assistant Secretary will have to perform parts only (and quite enough for any one man) of the numerous avocations of Dr. Norton Shaw; his principal duties will be those of Editor of all the publications, and superintendent of the Assistants and subordinate officers of the establishment.

Finally, let me say that, if I am enabled to conduct your affairs during the ensuing year, I trust that I shall, at its close, be able to announce to you, that there has been no diminution of the prosperity to which we have attained. I must, however, add that the term of my two years of Presidency will then have been completed. And, when I remind you that, if I live till the next Anniversary, I shall have acted as your President for nine years—and that on many other occasions I have also been seated in this chair to do the duty of your absent Presidents—I know that, however great my shortcomings may have been, you will admit that I have zealously served you; whilst I can truly assure you that this service has been a source of the deepest gratification to myself, since I have invariably met with your hearty support.

The capabilities, however, of doing effective service have their limits in the life of any man; and you must not think of changing your rule of biennial Presidencies in my favour, as some of my kind friends have suggested; for I feel that I cannot in a future year undertake, in addition to official and other occupations, this most honourable duty.

Pray, therefore, look to the coming year when I must take leave of you in the capacity of a President, and select some one as my successor, who shall be worthy of the high distinction of presiding over you,—one who will value this privilege as I do,—and who will strive, as I have striven, to promote the interests and advancement of the Royal Geographical Society.

PAPERS READ

BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY

DURING THE SESSION 1862-63.

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[FORMING VOL. XXXIII. OF THE SOCIETY'S JOURNAL.
PUBLISHED AUGUST 20TH, 1864.]

I.—*Exploration of the Lower Course of the River Burdekin, in Queensland, and its identification with the River Wickham.* By GEORGE ELPHINSTONE DALRYMPLE, Esq., Commissioner of Crown Lands in the Kennedy District of that Colony. Preceded by an extract from a Despatch to His Grace the Duke of Newcastle, H.M. Secretary of State for the Colonies, from His Excellency Sir George F. Bowen, Governor of Queensland, dated "Brisbane, 5th March, 1862."

Read, November 10, 1862.

"MY LORD DUKE,—I have the honour to transmit herewith copy of a letter from Mr. George Elphinstone Dalrymple, reporting his exploration of the course of the River Burdekin to its principal estuary, now identified with the River Wickham of the charts.

"I have the honour, &c.,

(Signed) G. F. BOWEN."

To the Hon. the Colonial Secretary, Brisbane.

Bowen, Port Denison, February 12, 1862.

SIR,—I have the honour to state, for the information of his Excellency Sir George F. Bowen, that having lately had to visit the neighbourhood of Upstart Bay and the Lower Burdekin Valley on official duty, I availed myself of the opportunity to connect my explorations of that river in 1859 and 1860 * with my maritime exploration of its mouths.

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* *See* Proceedings of the Royal Geographical Society, vol. v. No. 1, pp. 4-8.

Passing Camp XLVI. of my expedition of 1859 and 1860 on Upstart Bay, near the south-eastern mouth of the Wickham River, I crossed fine open plains, richly grassed and watered by lagoons, bounded on the north-east by the mangrove-flats of Upstart Bay, and stretching away to the south for about 8 miles to Stokes's, Gregory's, and Spencer's Ranges, which are parallel to the coast.

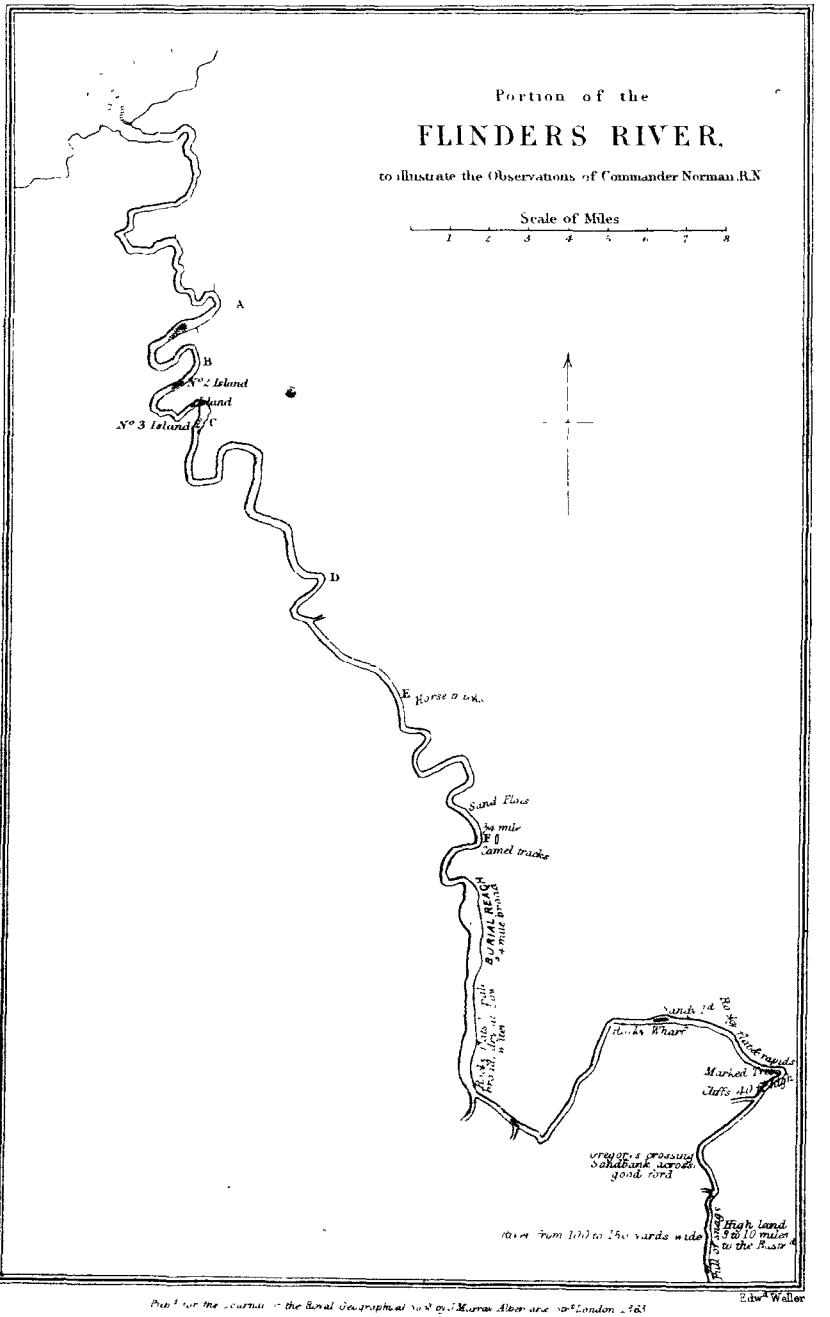
On the 15th December I ascended Mount Inkermann about 3 miles from the principal mouth of the river, the course of which lay extended beneath me, sweeping round (from the immediate neighbourhood of my last point of exploration thereon in 1859 and 1860) into the large estuary of the river in Upstart Bay, surveyed by Captains Wickham (H.M.S. *Beagle*, 1839) and Blackwood (H.M.S. *Fly*, 1843), and by Mr. Smith, R.N., and myself in the Queensland Government schooner *Spitfire*, in 1860, when I had the honour of reporting to his Excellency that this estuary was the principal mouth of the Burdekin.

I followed the course of the river up for 30 miles—to the place, in fact, from which I was obliged to turn back on my first expedition—and have now the gratification of being able to report that I have at length completed my exploration of the lower course of this river from Dr. Leichhardt's starting-point in lat. 20° 37′ s., long. 147° E., to its mouth in Upstart Bay in lat. 19° 42′ s., long. 147° 30′ E., a distance of about 110 miles.

I found the course of the Burdekin to be undivided to within about 15 miles of its mouth, at which point, and also at about 3 miles lower down, large branches are thrown off on the northern bank of the river, which enter Upstart Bay on the eastern side of the Cape Bowling Green delta, at about 9 miles and 3 miles respectively north of the principal mouth.

At 9 miles from the mouth, navigation ceases even for boats, and its bed assumes the usual character of the whole of its lower course, viz. extensive reaches of water occupying the whole bed, which alternate with extensive sweeps of red sand (the *detritus* of granitic rocks) through which meanders a running stream of about 50 feet broad and 2 to 3 feet deep. The course of this river from the point at which it emerges from Leichhardt's Range (of my previous expedition) is about due north-north-west for 60 miles. South-eastward of Mount Elliot, a low range named by me "Mount Bend-Easterly" causes it to sweep round in a semicircle of about 25 miles, when it reaches the ocean.

The whole banks of the Lower Burdekin are richly grassed, open forest country, with occasional plains of greater or less extent, watered by the river and lagoons. Finer cattle-runs are not to be found in Queensland, and the richness of the herbage, grasses,



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and soil, the purity of the water, and healthiness of the climate render the valley of the Lower Burdekin and its tributaries a most valuable addition to the pastoral and agricultural resources of the colony.

I have the honour, &c.,

(Signed) G. ELPHINSTONE DALRYMPLE.

II.—*Reports of the various Expeditions fitted out to relieve, or ascertain the fate of Messrs.* BURKE *and* WILLS, *comprising—*

1. Report and Journal of Commander W. H. NORMAN, R.N., with Map showing portion of Flinders River.
2. Diary of J. M'KINLAY, Esq. (with Map).
   (*a*). From Adelaide to Leichhardt River (Camp 58).
   (*b*). From Camp 58 to Port Denison.
3. Journal of Landsborough's Expedition from Carpentaria (with Map).
   (*a*). Report to Captain NORMAN on the Albert River.
   (*b*). From Albert River, south-westward, to Rich Plains, Herbert River, about 20° 15′ S., 158° 4′ E. (both approximative).
   (*c*). From Albert River across the Australian Continent, *viâ* the Darling River to Melbourne.
4. WALKER'S Expedition from the Nogoa to the Gulf of Carpentaria (with Map).
5. Despatch from Sir H. BARKLY, of 21st August, 1862.
6. Despatches from Sir G. BOWEN, of 15th March and 12th April, 1862.

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1. *Report of* Commander NORMAN, R.N., *followed by Extracts from Journal.*

To the Hon. the Chief Secretary, &c.

H.M.C.S. *Victoria*, Hobson's Bay, April 1, 1862.

SIR,—I have the honour to forward the accompanying copy of my journal on the late expedition to the Gulf of Carpentaria, for the purpose of rendering relief, if possible, to the missing explorers under the command of Mr. Burke, and of directing the movements of the two land-parties organized and dispatched from Brisbane and Rockhampton; and beg to submit the following condensed remarks and observations of the voyage and expedition which I had the honour to command, for the information of the Government.

The voyage from Brisbane to the Barrier Reef (8 days) augured well for a quick passage to the head of the Gulf; but a strong gale commencing on the 1st September separated the *Victoria* from the *Firefly*, and proved the cause of a sad disaster to the latter, which was most unusual for that season of the year. Fortunately the wreck was capable of being towed without disembarking the horses, which were accordingly landed on the Albert River (Gulf of Carpentaria), about 30 miles from its mouth; after which I proceeded to examine the river, which I found at this season navigable for 55 miles.

On 8th November I visited the Plains of Promise, which, to all appearance, well deserve the name, although, in consequence of many months' drought, not much grass was to be seen on them at that time. Same afternoon we returned to the junction of the Barkly and the Albert, and marked a tree on the west bank, near a fine water-hole, about 300 yards distant from the river.

On 16th November I started Mr. Landsborough and party on the south-western expedition.

On 7th December Mr. Walker arrived with the welcome news of having found traces of Burke on the Flinders. On the 20th, I dispatched Walker and party to take up the tracks they had found of Burke, and follow them up, arranging at the same time to meet him on the eastern bank of the Flinders about the 28th or 29th, in order to examine the tracks myself and obtain any documents which might be found. On arriving at this spot at daylight on the 29th, I found, to my great dismay, that the place we had appointed to meet each other at was inundated during the spring-tides, so that it would be impossible for horses to come down. Leaving a bottle containing a memorandum for Walker, I proceeded up the river to within 3 miles of Burial Reach; but having some doubts in my mind as to my being in the Flinders, from the fact of there being no marks to indicate the entrance and other signs, I returned to the ship. However, on examining Stokes's chart, which I had left on board, I satisfied myself that I had been in the Flinders, and therefore, on the following morning, dispatched the second lieutenant in charge of a few stores I had for Walker, with orders to examine carefully the eastern bends of the river, at places marked on the chart.

On the 10th I left the ship with the barge and galley for the purpose of prosecuting further search for the camps and relieving the cutter, taking with me 8 days' provisions, and same day met the cutter at Station A, on her way down to the ship, having found no traces of any party.

Next morning explored the plains for 3 hours. We found them dry mud, apparently overflowed at every spring tide, with the ex-

ception of some small rises. During this morning we came across the tracks of a horse, together with the footprints of a man walking alongside, going north; also, other tracks leading south.

We returned to the boats, and proceeded up the river to the place marked G. Camped at 5 P.M., on the east bank, and, guided by Wilson, who had previously seen them, went to examine the tracks of the camels which the officer of the cutter had discovered, and found them at a dry water-hole about 250 yards from the banks of the river. At this camp the country assumed a more pleasing aspect, its features bearing altogether a different character. Instead of mud and mangroves, we found acacia, box, gum, wild plum, and other trees, while the soil was clothed with luxuriant grasses. I started on the 13th January in the galley to explore the river farther up. After about 4 miles we came to what proved to be the Burial Reach of Stokes; at the head of this reach the banks of the river were of a rocky formation, and the bed of the same nature, with only 6 inches water at low tide and very level, so that we had to carry our boat nearly half a mile: here the river divides itself into two arms, the one bearing south, and the other south-east. I proceeded up the latter for about 18 miles, passing over four rocky bars, at each of which we had to get out and haul our boat over.

Finding no indications of any one having visited this neighbourhood, we marked a tree, and returned to the first rocky bar; anchored there until the flood-tide made, which was 10 P.M., and reached the camp at Burial Reach at 7·30 A.M. on the 14th of January. Reached the ship on the 16th of January, and started for Investigator Roads, where we remained till, at 11·30 P.M. on the 6th February, Landsborough reported his arrival at the depôt on the 19th January, having penetrated in a south-west direction a distance of about 200 miles, when he was forced to return for want of water (*v. postea*).

After coaling at Investigator Roads, and calling at Bountiful, Booby, and Albany islands, I anchored on 17th February at No. VIII. Island. Here we discovered a rock awash not noted in either chart or guide. Surveyed it the next day, and examined the doubtful Chilcott Rocks, which I found to exist, and in nearly the same position as that assigned them on the chart.

Arrived at Port Denison on the 27th of February.

I . . report further, for your information, that the navigation of the Gulf of Carpentaria was found free from danger, from Booby Island to Bountiful Island. From the latter place to about 8 miles off the Albert River the water shoals gradually from 5 fathoms at 7 miles from the shore, to 3 fathoms at 4 miles, and 2½ fathoms at 3 miles; the bottom being mud. Many discolorations were seen and passed through, with no perceptible change in the depth

of water. They were at first alarming, having all the appearance of sand-banks with but few feet of water on them. In the channel of the bar across the Flinders was found 5 feet at low water, and at the Albert River 4 feet; the rise and fall being nearly the same at each, viz. from 6 to 12 feet. Inside the bars both rivers are free from dangers for the first 9 miles; beyond which they are equal, if not superior, to the Brisbane and Fitzroy rivers. There is only one tide in the 24 hours, and high water occurred between 9 P.M. and 4 A.M.

The winds in October and November were mostly from the south-east in the morning, east at noon, and north towards sunset; calms during the night. December 6th and 7th, a heavy gale set in from the north-east, with torrents of rain, which flooded the plains for some days. This gale veered to north, clearing up at north-west, leaving this monsoon all the month. From January to the middle of February the winds prevailed mostly from north-east and north to north-west, but with no great strength; frequent calms.

The country on the banks of both rivers, for the first 15 to 20 miles from the sea, is constant monotonous mangrove and mud, more or less flooded with the spring-tides, and swarming with insects. Higher up, as the land rises, vegetation improves rapidly, and the scenery, although mostly very flat, is good and promising for tropical vegetation. The first rains produced good grass, which grew at the rate of an inch per diem, by actual measurement 10 days after the rain fell.

Alligators and crocodiles were seen; but they are neither large nor numerous, and were both shy and timid. Some few snakes on the banks of the river were seen; they were supposed to be of the water-species.

The mosquitoes, sand-flies, and the common fly were most numerous and troublesome. Every scheme was resorted to to obtain rest at night, but to no purpose if there were not a strong wind.

Investigator Roads, as is mentioned by Flinders and Stokes, I found a good anchorage, secure from all winds, easy of access, and having good holding-ground.

The natives of Bentinck Island numbered about 60, are treacherous beyond conception, and those seen up the rivers ought not to be relied upon with any confidence.

Memoranda from Journal of Voyage of H.M.C.S. 'Victoria' from Hobson's Bay to Carpentaria.

Departure 4th August, 3 P.M.

August 28.—Lat. 18° 7′ S., long. 153° E. Steady trade-winds with fine weather. Lihou Reefs 65 miles distant.

Aug. 29.—Weather changing; 15° 46′ S., 151° 35′ E.; therm. 80° Fahr.

Aug. 30.—Weather unsettled. A southerly set of current of 22 miles. (14° 55′ S., 149° 42′ E.)

September 2.—Strong gales, S.E. veering S.S.E. 12° 12′ S., 144° 50′ E.

Sept. 5.—Gale broke, and at 6·15 P.M. anchored on Great Detached Reef, 18 fathoms, sandy bottom; 85 fathoms cable out. (N.B. The course steered from noon this day showed a current of two hours to northward. Noon 11° 31′ S., 145° E.)

Sept. 7.—Found convoy (the *Firefly* with the horses for Landsborough's expedition on board) wrecked on a coral-reef. Horses all saved but three.

Sept. 11.—Barge of *Victoria* went adrift.

Sept. 22.—Engaged till this day lightening and getting off the *Firefly*, and reached Cairncross Island, east side of Cape York, against strong ebb-tide (peculiar to this season), which had landed barge unharmed after drifting masterless 60 miles (of course favoured by a still more rapid flood-tide).

Sept. 24.—Noon, lat. 10° 55′.

Sept. 26.—Noon, lat. 14° 34′ S., long. 139° 46′; therm. 77½° Fahr.

Sept. 27.—Winds light, easterly, and northing after 8 A.M. Anchored off Bountiful Island, and ascended Mount Flinders; quite low. Soil of island sand or disintegrated sandstone, covered with rank, dry, wiry grass. By 29th had caught 126 turtle for jerking, &c., to save provisions.

Sunday, September 29.—At 4 P.M. anchored in Investigator Roads in 5 fathoms. The winds for the last three days had been north-east during the day, and southerly at night. At 1½ to 2 miles off various discoloured patches were rounded or passed, but no perceptible difference in the depths of soundings was found—the water being of a very light colour generally makes the navigation rather exciting. The changes in the colour of the water this day have all the appearance of sand-shoals, or dangers of some kind, but nothing dangerous to navigation was met with on our way up the gulf. The depths found are generally very uniform, deepening from the eastern shore to 38 fathoms towards the middle of the gulf, with generally mud or sandy bottom; some few casts of rocky or hard bottom were found near latitude 12° 25′ S., longitude 141° E., with some 18 to 24 fathoms, and for 35 miles in a S.S.W. course.

Sept. 29 *to October* 17.—Engaged arranging for Mr. Landsborough's departure, who left 16th November. Note that whole coast appears to be intersected with creeks and rivers for some miles. Entered (17th) what was supposed to be a channel, but

proved to be the outlet of a river (supposed to be the Leichhardt).

Oct. 17 *to November* 18.—Nothing calling for remark except intense heat.

Nov. 20.—Heat at 2 P.M. 104° in shade.

Nov. 29.—Heat at 10·30 P.M. 107°!!

December 5.—Landed at "Junction" (Albert River), the spot fixed upon for a depôt on leaving Melbourne, and found the place had been some feet under water last tide, and that for miles the plains were then covered with salt-water, showing the place to be quite uninhabitable, with no fresh-water to be had for miles around. . . . . After we had passed two reaches going down, we were suddenly surprised by an ambuscade of natives on both sides. They were painted, and armed with long spears, womeras, and clubs; but they were not fired at. Therm. 98° to 109°.

Dec. 7.—Mr. Walker arrived in the midst of a furious gale. At 10 P.M. cleared up; light E.S.E. wind. Therm. at 2 A.M. 70° Fahr.

Dec. 20.—Mr. Walker started on return journey.

Dec. 29.—At daylight visited the place of meeting marked [A], and found the nature of the country such that the tides overflowed it at the springs, with nothing but mud and mangrove in sight. About 22 miles further up, the river became more tortuous, and several sand-banks were passed, contracting the tide, which was running up strong. I continued on with the hope of reaching Burial Reach; but, after going on to 1 P.M., we stopped to dinner, when I landed, and found the country better, with grass and water in plenty. Left again at 2·30 P.M., and proceeding 10 miles further, came to some cliffs on the eastern side (dark brown clay) 12 feet high. I had now come by estimation 35 miles up, and had not got to Burial Reach, or anything like it, by Stokes's description; no "grassy islands," or "sloping banks down to the water's edge clothed with grass," but only mangrove and mud, and one or two sunken islands with the tops of mangrove a foot above water as we passed them, to indicate their position. The country around here is the best I have seen in the Gulf, and the grasses, of which there are varieties, very good, with the timber larger and looking more healthy than any part of the Albert. But, finding no traces of any one, and the upper part of the river here not agreeing with its description, I began to fear I must be in a wrong river, so I determined to start on the turn of tide, return to the ship, and make a further exploration of the coast to the eastward of this entrance. At 10·15 P.M. started with the first of the tide downward, and in a dead calm, with much thunder and lightning all round the compass.

Monday, Dec. 30.—At 7·30 A.M., the storm having passed sea-

ward, stood out of the river to the bar, and waited until turn of tide and north-west or sea-breeze to fetch the ship, which we did at 3·30 P.M. On examining Stokes's book and chart with the first lieutenant, I found there could be no doubt of my having been up the Flinders, and that *the difference in time of tide in seeing these places makes so much difference in their appearance.* Stokes appears to have gone up and down at night. I passed from the first position [A] right up, by daylight.

January 11, 1862.—Started at daylight in three parties to examine plains. These are mud, mostly overflown at spring-tides, but some of the rises above high water-mark, and on one of these came upon the track of one horse and one man, with shoes or boots; tracks led north, and were afterwards discovered leading south. In the afternoon went to examine camel-tracks at Station G of chart, where the country being higher assumes quite a different appearance, there being cliffs of brown clay 20 feet high, whose summits are clothed with acacia, box, gum and native wild plum. Tracks of camels could not be identified.

Jan. 21.—Squally with rain, but much less wind from west-north-west. Ordered the annual survey of all stores to be held, and in the afternoon proceeded in the gig to Bentinck Island to try and get up a friendly feeling with the natives there. On closing in with the beach they came down, about 30 of them, men and boys, fully armed. Seeing they were hostilely inclined, I did not land, but proceeded further south away from them, and there landed, which was no sooner done than they were after us. On their coming up, tried to show them by every means that we were not come to do them harm, but to give them some presents, which I at once did by giving them two tomahawks; they then laid their arms down, but would not leave them for a moment, or come near us. Seeing they were so very suspicious, I thought it better to leave them for the present, and did so, going over to Fowler's Island to look at it. I found it of a rocky formation of the same nature as up the Flinders River, with some good dark soil on the top, on which good grass was growing, but no timber but stunted mangrove, and no water fit for anything.

February 6.—Landsborough returned from his exploration to south-west; had reached depôt 19th January (*v. postea*), and was anxious to start south-east. No casualties.

Feb. 12.—On landing, there being only two natives seen, with much persuasion I induced them to come near to receive the gifts, after they had been made to understand by signs and gestures that all was for them and their families. I ordered the boat's crew to go down to the boat, which was about 300 yards off from us, which they all did. I followed them myself about 10 minutes after, with my back to the two men, who had kept their spears in hand all the

time. I had not got more than 25 or 30 yards from them, when a noise behind made me turn suddenly round, dropping at the same time my umbrella on my shoulder; as I did so I discovered both these treacherous savages in the act of poising a spear each, and stepping stealthily after me, not more than 10 yards off. My sudden discovery of their intended object by facing them, put them into confusion, and they stole away as if ashamed of being found out. Their wives and children have always been kept at a long distance, but nothing seemed treacherous in their behaviour further than that circumstance, and their not being inclined at any time to lay down their arms. I am now satisfied they are treacherous and bloodthirsty. After leaving them, they ran down and took charge of their boat and the presents, and seemed much delighted, judging by the noise they made. At 4·30 weighed and took our departure from the island, with the wind light from the north-west, and sultry weather. Latitude, at noon, 15° 55′ S.; longitude, 140° 4′ 45″ E. Thermometer, 95° in cabin; on deck, in the sun, 130°; stoke-hole, 145°.

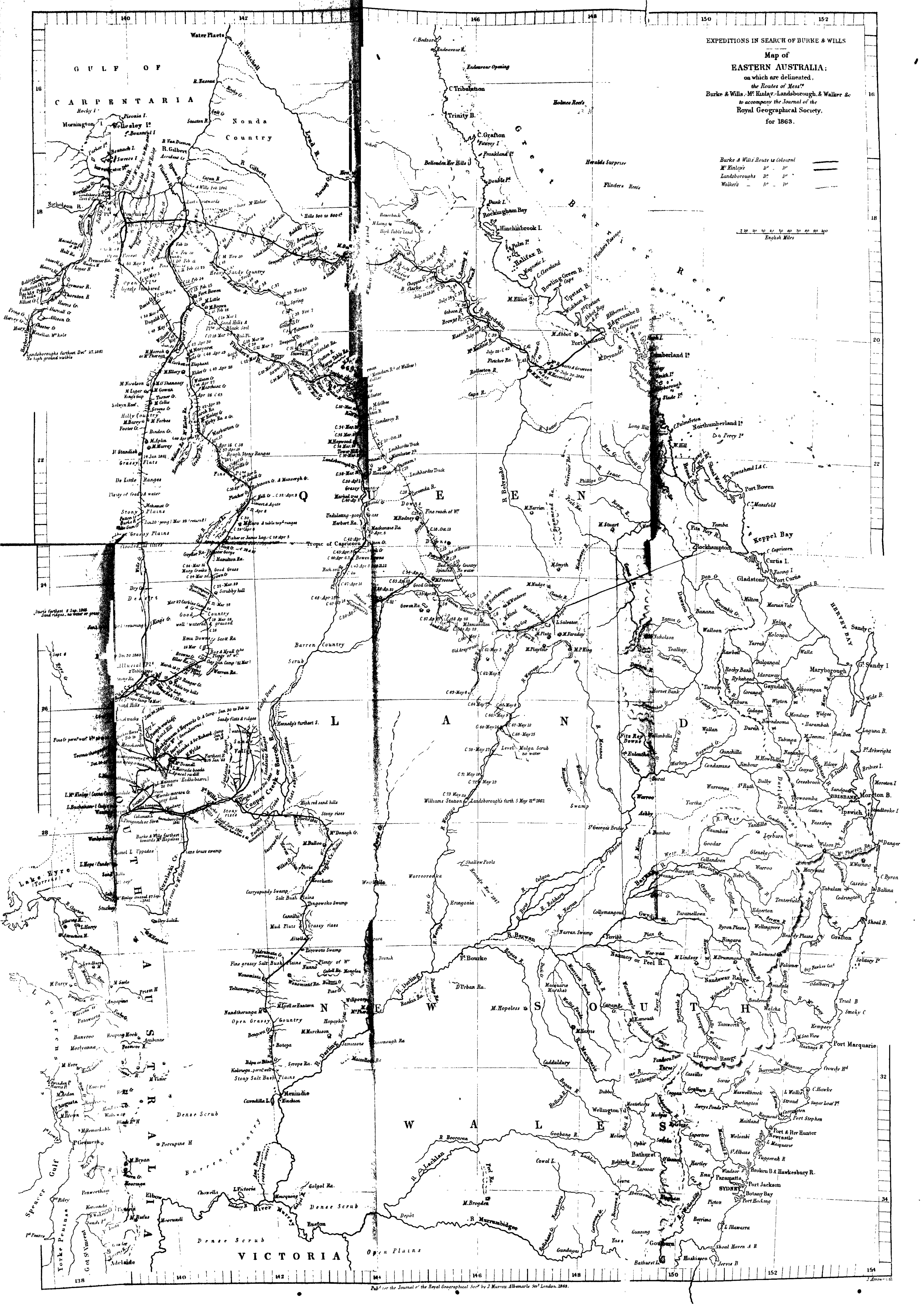
Feb. 17.—At 6 P.M. brought up under No. VIII. Island in 6½ fathoms water, with 50 fathoms of cable. On approaching the place to anchor, observed a danger not noted on the Chart or Strait Pilot.

Feb. 18.—Fresh south-east gale with continued rain until 1 P.M. On examining the above shoal at daylight, and finding it to be a coral-reef, with only 18 inches water on it, of about 20 yards diameter, steep all round, and right in the fairway of any vessel anchoring at or passing this island, to avoid the doubtful rock to the eastward of it, directed Lieutenant Woods to survey and fix its position; and the weather moderating in the afternoon, took two boats, the galley and the cutter, to look for the doubtful rocks * to the eastward. At 5 P.M. (low water) found them both, passing with galley over the northernmost, with only 18 inches of water on it, and pulled up to the south one, which is about 150 yards from it, north and south, and with 7 fathoms of water between them, and steep to all round. This I found was awash, and had a lump of broken dead coral on it, on to which the bowman held the boat while bearings were taken, which were found to agree in every way with the position marked on the Admiralty Chart for the bank, with 1 fathom on it, and from which Chilcott Rocks bear about north *true* 150 yards.

Feb. 27.—Anchored in Port Denison.

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* Chilcott Rocks.


EXPEDITIONS IN SEARCH OF BURKE & WILLS
Map of
EASTERN AUSTRALIA;
on which are delineated,
the Routes of Mess.rs
Burke & Wills, Mc Kinlay, Landsborough, & Walker &c
to accompany the Journal of the
Royal Geographical Society,
for 1863.
Burke & Wills' Route is Coloured
Mc Kinlay's Do Do
Landsborough's Do Do
Walker's Do Do
English Miles
GULF OF CARPENTARIA
QUEENSLAND
SOUTH WALES
SOUTH AUSTRALIA
VICTORIA
Pubd for the Journal of the Royal Geographical Socy by J Murray, Albemarle Str. London. 1863.

2. (*a*). *Diary of* Mr. J. McKinlay, *leader of the Burke Relief Expedition, fitted out by the Government of South Australia.*

I started from Adelaide with the camels, &c., on 16th August, 1861, and, on Friday, September 27, got all safe across the Lake Torrens, no water being at our crossing nor in view. Next day proceeded to Lake Pando (or Hope), the track thither, bearing from about 2° 30′ to 3° w., over a fearful jumble of broken sand-hills, occasionally passing a small flat trending w.n.w. and e.s.e.; at 11½ miles * passed on our left a small salt lake, dry, half a mile long; met numbers of blacks, apparently peaceably inclined; weather very hot and disagreeable for the season of the year, a hot north wind blowing.

[The expedition remained at Lake Hope till October 8th, to enable certain of the party who had been detached and had lost their way to regain strength. The soil being soft, the horses were unshod, there being little prospect of shoes being necessary for a long time. While here rather a strange circumstance occurred. A pelican, in an attempt to swallow a perch about a foot long by about 12 inches in circumference, was fairly choked after getting it half-way down its throat, and found in the morning quite dead, with the tail of the fish hanging out of its mouth. A considerable quantity of clover or trefoil on this lake; and at the eastern end, on the flooded flat, grass, but not abundant. The country in this part does not appear to have been visited by any rain for very many months; indeed years must have passed since any quantity has fallen in this sandy region; the bottoms of the claypans are nearly as hard as bricks. A considerable quantity of salt-bush of various kinds around the lake and on the flats, with some polygonum on the flooded flats; innumerable pigeons.]

Tuesday, Oct. 8.—Started from Pando Lake Camp; wind west and cool, and reached junction of Pando Creek, 4¼ miles. Creek about 250 yards to 300 broad; on the s.w. bank of lake there appear to be layers of salty substance. Tipandranara Lake bears from junction w.n.w. Within 2 miles, the creek contracts to less

* Whenever possible, the distance of each day's march will follow the day's diary. But in order to distinguish those made on the main route from the occasional excursions made from camps or depôts, the distances of all the latter will be printed in italic.—[Ed.]

than 100 yards, and at camp about 6 feet. Arrived at 4·10 P.M. on small Lake Uppadae or Camel Lake; total distance 15 miles of miserable country, with salt-bush of various description, and samphire, and small stones occasionally. Lake about 1¼ mile long, by an average width of ¾ of a mile, surrounded by sandhills, very little timber, and that little of the most miserable description of box; a considerable quantity of rushes and a little grass round the margin, and lots of waterfowl. Interpreters absconded. Day's course from N. 20° W. to N. 10° W., and latterly as much as N.; distance made about 15 miles.

Oct. 9.—Camped at a long deep water-hole. Creek dry in a number of places; distance 12¾ miles.

Oct. 10.—Afternoon scoured great part of the country a-head, and could find no water; camped beside a small pool of water in a creek that I had crossed at mid-day; distance 7 miles.

Oct. 11.—Started with Mr. Middleton to go to the relief of whites said to be in the interior. On a bearing of 18°, at 22 miles arrived at Lake Perigundi, a semicircular lake, from 3 to 4 miles in length, by 1¾ mile broad. The water not very good; the natives even dig round in the clay a short distance from the lake for water for their use.

Oct. 12.—Camped on a fine long sheet of water, Wankadunnie, 1½ mile distant.

Oct. 14.—After first 9½ miles travelled over undulating country of sand, dry flats, and flooded ground. From the top of the highest sandhill, at that distance, the whole country, particularly to the eastward, is one mass of floated timbered flats, and subject to awful inundations. At those times it must be quite impracticable, the main creek (apparently) upon our right varying from 1 to 2½ miles in width, with patches of young trees across its bed and sides. If this country had permanent water, and rain occasionally, it would do well for stock of any kind, having a fair sprinkling of grass, compared with anything of late seen. At 14 miles came to the bed of a small dry lake, with lots of fine grass. When rain has fallen on this country it is difficult to say; most of the herbs and grass, and shrubs, are as dry as tinder, and will ignite at once, but the country is more open and fit for pasture. At 16 miles crossed the bed of salt-lake, now dry, and of no great extent, running north and south, in an extensive flat. Camped on west side of Siva Lake, or Perigundi Lake; found it exceedingly boggy; and what seemed clover was nothing but young samphire; little or no grass; distance 25½ miles.

Oct. 15.—Finding this lake won't suit as a depôt till my return from searching for reported white men, I started to-day to endeavour to find a place for that purpose, and travelled over alter-

nate heavy and high sandhills and flooded wooded polygonum-flats, with a few grassy patches. At 11 miles, came to a lake, Cudye-cudyena; plenty of grass and clover, but the water all but dried up, a few inches only being around its margin; all the centre and south end, and side, being a mudbank. On my way back came on a creek with sufficient water and grass, though dry, to suit the purpose, at 2 miles, and pushed on to camp; distance 2 miles.*

Oct. 16.—Passed N.W. arm of lake; then began to ascend the sandhills, which were very soft, high, and steep; kept on till arrived at water close within ¾ of a mile of where I intended to fix the camp as depôt; total distance, 8½ miles to Careri Creek, which seems to flow from the west of north, or nearly north and south; name of water-hole and camp is Wantula Depôt.

Oct. 17.—Making arrangements for start in search of the white men.

Oct. 18.—At 8 A.M., started; crossed well-grassed flooded polygonum flats or plains, for an hour, crossing Kiradinte in the Careri Creek; then left the creek on the left, and passed over a succession of sand ridges. At 9·15 arrived at Lake Cudye-cudyena, at about 9 miles. It was quite a treat; abundance of good water, and any quantity of grass of various kinds, and plenty of clover. It is about 6 miles long, and fully ½ mile wide, well timbered. On a bearing from southern end of lake (now called Lake Buchanan), Lake Bulpaner, now all but dry, is distant about 2 miles, along almost a valley. Sent back letter to Camp Depôt to desire them

* A strange circumstance occurred this evening, showing isolated instances of gratitude and honesty of the natives. In the evening, after my return, a number of natives were near the camp; amongst them, just as they were about to depart, I observed an elderly man and his son, a boy of 8 to 10 years, who appeared to be an invalid, and was about to be carried off by the father. I stopped him; and, as I was at supper, gave the youth some bread and meat, and tea; when they all took their leave. About the end of the first watch (which was regularly kept), I was awake, and heard the person on watch, Middleton, speaking evidently to a native; who, to my astonishment, as well as to Middleton's, ventured up to the camp alone at night; and what would the reader suppose his errand was? It was to bring back our axe, that one of his tribe had purloined unseen from the camp during the afternoon! On delivery of said article he at once took his leave, promising to come in the morning.

Next morning a few of the natives approached the camp; but stood off at a respectable distance, not sure how they were to be dealt with for their dishonesty, till, by and by, the old man with a few others came up; and gradually they that stood aloof came up also. Amongst them were women and children, to whom I made various little presents of beads and fishhooks, with which they seemed pleased. To the old man, for his honesty, I gave a tomahawk, with which he appeared highly pleased—his name was Mootielina: the thief I could not find out, or would have given him his deserts likewise. They did not muster very strong this morning, only about 100; but numbers of others were visible all round the lake at the different camps. They all appeared very civil, whether from fear or naturally I could not guess.

to move on to this place, so much more desirable for a depôt than where they are now. Turned out the animals to await their return. Very open country till within 1 mile of Camp at Gunany, a large creek, about 60 to 80 yards wide, and from 20 to 30 deep, on which we found a number of natives just finishing their day's fishing. They had been successful, and had three or four different sorts of fish, viz., the cat-fish of the Murray, the nombre of the Darling, and the brown perch; and I think I observed a small cod. They offered, and I took several, which were very good: they promised to bring more in the morning. We came upon and crossed a large flooded wooded polygonum-flat, which continued close to the camp. *Distance travelled*, 25¾ *miles.*

Oct. 19.—Early this morning, about 80 natives, of all sorts, healthy and strong, visited the camp, and could not be coaxed or driven away. I think they would have tried to help themselves, were it not from fear of the fire-arms. How they came to know their deadliness I cannot say. Crossed creek to Toorabinganee, a succession of reaches of water in a broad creek, some apparently deep; then over very high sandhills, pretty well grassed, and arrived at Luncheon Place, an island often dry, now partly so, on south-eastern side, in an extensive irregular lake of about 8½ to 9 miles long, by an average of 1¾ to 2 miles; very hot; name of Lake Canna Canta-jandide. Thought I might be able to cross it at the narrowest place with the horses and camels, instead of going all round, as it put me out of my course; but found it too deep, so had to go round. Towards the end of our day's journey, over flat country, with large dry beds of lakes or swamps, as dry as ashes, with a saltlike appearance, the only vegetation being a few scattered bushes of samphire, and an occasional salt-bush; a more dreary country impossible to imagine. Arrived at Lake Mooliondhurunnie, a nice little lake, nearly circular, and nearly woodless, about 1½ mile diameter. Abundance of good water, and plenty of feed—clover, and some grass. Bearing of creek that fills lake, 350°; east end, 87°; west end, 303°; north side 15°.* On arrival at lake, saw several native-fires, which, on our lighting ours, were immediately put out. *Distance travelled*, 28 *miles.*

Oct. 20.—At day-light, about 90 to 100 natives, of all sorts, visited us; they were not so unruly as those of the morning before, having evidently had some communication with whites, using the word Yanaman for horse, as in Sydney, and one or two other words familiar to me. Plenty of fish of all sorts in the lake, although not very deep. The natives here say that the whites have left the above place, and are now at Undaganie. I observed several portions of European clothing about their camps on our course. The sandhills were exceedingly high on the western side,

but pretty hard; but on the eastern side almost precipitous, and soft drift sand; a dray or cart might get east; but I cannot fancy it possible it could return. An exceedingly hot day, wind north. On our way, the natives informed us the natives we had left in the morning had murdered the man said to be at the end of our day's stage. On some of the ridges, and on crossing a large flat creek, I observed two new trees or shrubs (they are both); from one I obtained some seeds, like beans, rather a handsome tree; the other, when large, at a distance looks like a she-oak, having a very dark butt and long, drooping, dark green, narrow leaves, and did not appear to have any seeds at present. Started at 7·17 till twenty-two minutes to ten, 9 miles, on a bearing of from 100° to 105°; at 8·18 sighted a large timbered creek, distant 1 mile, for about 7 miles, 360° to 140°. At twenty-two minutes to ten, observed a large, dry salt-lake, bearing 341°, north-west arm 330°, north arm 355°, distance to extreme point of north bank 9 miles. Bullingani informed us that a large lake lay on a bearing of 110°, some distance off, named Murri Murri Ando. At 2·20 reached Lake Kadhi-baerri. Found plenty of water, and watered the horses (the camels some distance behind, quite unable to keep up), and at once proceeded northward along the side of a large beautifully-timbered, grassed, and clovered swamp (or creek) about 1½ miles across, to ascertain the fact as to the presence of a European, dead or alive, and there found a grave rudely formed by the natives, evidently not one of themselves, sufficient pains not having been taken, and, from other appearances, at once set it down as the grave of a white, be he who he may. Determined in the morning to have the grave opened and ascertain its contents. Whilst I went to top of sandhills, looking round me, Mr. Hodgkinson strayed a short distance to some old deserted native huts, a short distance off, and by and by returned bearing with him an old flattened pint-pot, no marks upon it; further evidence that it was a white, and felt convinced that the grave we saw was that of a white man; plenty of clover and grasses the whole distance travelled, about 18 miles. Kept watch as usual (but did not intend doing so); but, just as we were retiring, a fire suddenly struck up, and we thought some of the natives had followed us or some others had come to the lake; rather a strange matter after dark. The fire soon after disappeared, which made us more certain still that it was natives.

Oct. 21.—Up in good time; before starting for the grave, went round the lake, taking Mr. Hodgkinson with me to see if natives were really on lake, as I did not intend saddling the camels to-day if there were no natives here, intending to leave our camp unprotected; rather unwise; but being so short of hands, could not help it, the grave being much out of sight. Found no natives round

the lake, nor any very recent traces, saving that some of the trees were still burning that they (when here last) had lighted. We started at once for the grave, taking a canteen of water with us, and all the arms. On arrival, removed the earth carefully; and close to the top of the ground found the body of a European, enveloped in a flannel shirt with short sleeves, a piece of the breast of which I have taken; the flesh, I may say, completely cleared from the bones, and very little hair, which must have been decomposed: what little there was I have taken. Description of body, skull, &c.: marked with slight sabre-cuts, apparently two in number; one immediately over the left eye; the other, on the right temple, inclining over right ear, more deep than the left. Decayed teeth existed on both sides of lower jaw and right of upper; the other teeth were entire and sound. In the lower jaw were two teeth, one on each side (four between in front), rather projecting, such as are sometimes called in the upper jaw "buck teeth." I have measured the bones of the thigh and leg, as well as the arm, with a cord, not having any other method of doing it. Gathered all the bones together, and buried them again, cutting a lot of boughs and other wood, and putting them above the earth. Body lies with head south, feet north, lying on face, head severed from body. On a small tree, immediately south, we marked: "MK., Oct. 21, 61." Immediately this was over, we questioned the native further on the subject of his death. He says he was killed by a stroke from what the natives use as a sword (an instrument of semicircular form), 5 to 8 feet long, and very formidable. He showed us where the whites had been in camp when attacked. We saw lots of fish-bones; but no evidence then on the trees to suppose whites had been there. They had certainly chosen a very bad camp, in the centre of a box-scrub, with native huts, within 150 to 200 yards of them. On further examination we found the dung of camels and horse or horses, evidently tied up a long time ago. Between that and the grave we found another grave, evidently dug with a spade or shovel, and a lot of human hair of two colours, that had become decomposed, on the skin of the skull, and fallen off in flakes, some of which I have also taken. I fancy they must all have been murdered here; dug out the new-found grave with a stick (the only instrument we had), but found no remains of bodies, save one little bone. The black accounted for this in this manner: he says they had eaten them. Found in an old fireplace, immediately adjoining, what appeared to be bones very well burned, but not in any quantity. In and about the last grave named, a piece of light blue tweed, and fragments of paper, and small pieces of a 'Nautical Almanac,' were found, and an exploded "Eley's cartridge." No appearance on any of the trees of bullet-marks, as if a struggle had taken place. On a further examination

of the blacks' camp, where the pint-pot was found, there was also found a tin canteen, similar to what is used for keeping naptha in, or some such stuff, both of which we keep. The native says that any memos. the whites had are back on the last camp we were at on the lake, with the natives, as well as the iron-work of saddles, which on our return we mean to endeavour to recover, if the blacks can be found: it may be rash, but there is necessity for it. I intend, before returning, to have a further search. No natives yet seen here.

Oct. 22.—Were just about to get on the horses to have a further search when the natives made their appearance within ½ a mile of us, making for some of their old huts. Immediately on observing us, made off at full speed. Mounted the horses, and soon overtook one fellow in much fear. In the pursuit, the black fellow with us was thrown from his horse; the horse followed, and came up with us just as we pulled the frightened fellow up. Immediately after, our black fellow came up, mounted his horse, and requested us at once to shoot the savage, as he knew him to be one of the murderers of the man or party; but we declined, thinking we might be able to glean something of the others from him. On taking him back from where we caught him to the camp, he brought us to a camp (old) of the natives, and there dug up a quantity of baked horsehair, for saddle-stuffing. He says everything of the saddlery was burned, the iron-work kept, and the other bodies eaten; a sad end of the poor fellows! He stated that there is a pistol N.E. of us, at a creek, which I have sent him to fetch; and a rifle or gun at the lake we last passed, which, with the other articles, we will endeavour to recover. Exceedingly hot; windy, and looks as if it would rain. The natives describe the country from south to north of east as being destitute of water, or creeks, which I afterwards found cause to doubt. I have marked a tree here on north side, "MK., Oct. 22-61; west side, dig 1 ft.;" where I will bury a memo., in case any one should see my tracks, that they may know the fate of the party we are in search of. There are tens of thousands of the flock pigeon here; in fact, since we came north of Lake Torrens, they have been very numerous, and at same time very wary. Mr. Hodgkinson has been very successful in killing as many of them as we can use, mixed with a little bacon. Before the native went to fetch the pistol, he displayed on his body, both before and behind, the marks of ball and shot wounds, now quite healed. One ball, inside of left knee, so disabled him that he had to be carried about (as he states) for some considerable time; he has also the mark of a pistol-bullet on right collar-bone; and on his breast a number of shot, some now in the flesh, but healed. His family, consisting of four lubras and two boys, remained close to our camp awaiting his return,

which he said (from pointing to the sun) would be ten or eleven o'clock next day. When called at twenty minutes to eleven P.M. to take my watch, I had not been on duty ten minutes when I observed a signal-fire in the direction he had gone, about 6 miles distant, and wondered he did not make his appearance, but all was quiet for the rest of the night, excepting that at intervals the fire was replenished.

Oct. 23, 4 A.M.—Just as we were getting up, not very clear yet, headed by the fellow I yesterday sent for the pistol, came about forty others bearing torches, shields, &c., shouting and kicking up a great noise, and evidently endeavouring to surround us. I immediately ordered them back, also telling the native that was with me to tell them that if they did not keep back I would fire upon them, which they one and all disregarded—some were then within a few paces of us, the others at various other distances. I requested Hodgkinson and Middleton to be ready with their arms and fire when desired. Seeing nothing else left but to be butchered ourselves, I gave the word "Fire." A few of those closest retired a few paces, and were being encouraged on to the attack, when we repeated our fire; and until several rounds were fired into them (and, no doubt, many felt the effects) they did not wholly retire. I am afraid the "messenger," the greatest vagabond of the lot, escaped scatheless. They then took to the lake, and a few came round the western side of it, southward, whom we favoured with a few dropping shots to show the danger they were in, by the distance the rifles would carry on the water. They then cleared off, and we finished with them. I then buried the memo., for any person that might happen to follow my footsteps, at the same time informing them to beware of the natives, as we had, in self-defence, to fire upon them. I have no doubt, from the manner they came up, that they considered us an easy prey; but I fancy they miscalculated, and I hope it may prove a useful lesson to them in future. Got breakfast ready and over without further molestation, and shortly after starting reached a recently-flooded richly-grassed flat, surrounded by a margin of trees, main bulk lying south of our course; thence crossed north-west end of another dry lake or grassed and clovered flat, similar to the other. At 1·20 made a large box-creek, with occasional gums, about from 50 to 60 yards wide, and 18 to 20 feet deep, sandy bottom, where we struck it perfectly dry, where a stream flows to west of north with immense side creeks (I fancy Cooper's Creek is a branch of it); followed its bed in its course northward, and reached a water-hole with no very considerable quantity of water. This creek is named Werridi Marara. From thence Lake Buchanan bears 232° 30′; Kadhiberri, 41°; Lake Moolion-dhurunnie, 296°. Crossed the creek and went on till 6 P.M., striking same creek and following its bed (dry) for

about 2 miles, and reached Dhurunnie Creek; a little indifferent water in its bed, very steep banks (about 30 feet high) and 60 yards broad. The bed of the creek, from where we struck it at 6 P.M., was chiefly rocky or conglomerate stone, resembling burned limestone. (*Distance not given.*)

Oct. 24.—Travelled over splendid grassy flats with low intervening sand-ridges; then made Arannie, a recently-dried lake (abundance of clover and grasses) 3 miles long by 1 broad, at right angles to our course, and struck it quarter of a mile from its northern extremity. Quite near to Ity-a-mudkie is another recently-dried lake; plenty of luxuriant feed. In another hour reached its western border, at a creek called Anti-wocarra, with no great quantity of water, flowing from 320°. Passed a large flooded flat, recently under water, with a great abundance of clover and grasses, reaching as far as the eye can trace. At right angles to our course, reached its western border, and at 2·25 reached the depôt at Lake Buchanan, or Cudye-cudyena, the place where I directed the camp to be shifted to, and found everything in good order, much to my satisfaction. (*Distance not given.*)

Oct. 25.—At camp very much the appearance of rain, but none has fallen. No part of this country has had any rain for very many months; the grasses and herbage, generally, on the hilly ground, being like tinder. If it had an ordinary share it would be an excellent healthy stock-country. From the numbers of natives, and their excellent condition, I am satisfied that many lakes and creeks in this part are permanent. The men are in excellent health and good spirits, and the animals, except the camels (they cannot stand the heavy hills of sand if at all hot, which it was on our last trip), are all in good condition. The wind is blowing from all parts of the compass, but rather cool. For days previous it kept from the north, and generally very hot. As yet no rare specimens obtained of birds, animals, or anything else.

Oct. 26. In camp.—Threatens very much for rain; very sultry; sun overcast; and wind from every quarter except north. Must endeavour to procure a native that can speak the language of the natives here, as those we have do not know one word, nor do the natives here understand them. They all circumcise, and almost universally knock out the two front teeth of the upper jaw. After all the threatening for rain, the day has closed without any.

Oct. 27. In camp.—Wind south and sultry; everything ready for the return party making a start to-morrow: I expect them to be absent about three weeks. Should any rain fall ere they return, I will go over to Cooper's Creek Depôt; but the country is so exceedingly dry in this region at present, that unless I can make out to hit upon those places where water has been left by the last flood, it would be quite impossible to travel with anything like safety.

Not a single quart of surface-water left by rain has been fallen in with since we left Lake Torrens; and am almost satisfied in my own mind that Burke and party either reached the north coast, or at all events went a very long way out, on a bearing of (firstly by account of the natives) 311½°, to or passing a salt-lake or water-course (perhaps then fresh), where the natives report that the whites killed their horse. They call the place Beitirie-ma-lunie; there is also another lake, salt now (perhaps then fresh), called Baramberrany.

Oct. 28.—At 2·45 P.M. started Mr. Hodgkinson,* Bell, Wylde, and Jack (native). Weather sultry, sky overcast. Between 9 and 10 P.M. a heavy gale of wind from west, with a good deal of thunder and lightning, which blew our encampment quickly to the ground, after which we had a few squally showers from same quarter, but nothing of any consequence; towards morning the wind quite lulled.

Oct. 29 *to November* 30. Wantula Depôt.—Sowed some melon (pie), pumpkins, orange-pips, apricot, peach, and plum stones. About 2 miles from here found dung of horses or mules, of some considerable age, and on my return to the camp one of the men, a short distance from the camp, picked up part of a hobble-strap, with black buckle much worn, and had been patched, or rather sown, by some one as a makeshift; the leather was perfectly rotten. No traces on any of the trees round here of any one having been encamped. The flies all along have been a thorough plague; fortunately, and strange to say, we have had no mosquitoes, but thousands of small gnats take their place and find their way into everything.

Nov. 8.—No rain during the night, but it was very mild and close; wind south-east, with a few clouds, but with very little appearance of rain. Anxious to find water about a day's stage eastward of depôt, I started out for that purpose east, and at a mile distant entered a well-grassed flooded flat for about 2 miles, and at about 1¼ mile further arrived at sandhill. About 2 miles S.S.E. is the grassy bed of a fine lake, now dry. Not seeing anything in the appearance of the country to indicate the presence of water on this course, I started E.N.E. over sandhills, and at 2 miles came to very cracked flooded flats, and continued on them for 4½ miles, and at 1½ mile further came to a long salty swamp running nearly north and south, a desolate spot; then a sand rise, and another of the same. Changed course to due east over sandhills; at 7 miles long flooded grassed flat, north to south; then sandhill; at 8 miles came to an immense flooded flat, north to south, with great width

* This party did not rejoin till the 29th Nov., the native, Jack, having meanwhile deserted.

at its northern end. At 2¾ miles further came to top of very high sandhill, and close under, east, an immense dry salt-lake or very large flat. From this there is the appearance of a large lake northward; it may be mirage, but I have observed it further back on the day's stage, and from top of the highest hills it looks more like water than mirage. In making for it, I passed for the first 3 miles over sand-ridges, then over cracked flooded flats (grassless) for 4 miles, a box or gum creek on my right running northward and southward. At the end of this distance was satisfied I had been deceived, and camped on top of large sandhill at 6·50 P.M.; not a breath of wind, and smoking hot. I chose this for a camp, that I may be enabled at daylight to see if there are any waters within range of sight. *Distance*, 31 *miles.*

Nov. 9.—At daylight had a splendid view of the country round, but not the slightest appearance of water anywhere. At 10 A.M. got to camp.

Nov. 9 *to* 13.—(Mr. M'Kinlay was unwell.) A great inconvenience among the cattle, owing to flies, &c.

Nov. 13.—Wind very strong from E., and particularly cold, so much so that I can keep my coat on, and not feel inconvenienced by it; whereas, before, one's shirt was sufficient. Wind chopped round in the evening to S., pretty strong.

Nov. 14.—Getting quite well again, but knee quite stiff and painful. Very cold during the night, and at daylight quite ready for a top-coat. Wind strong from E.; moderated at noon, and got warm. It is quite a pleasure to see how well the bullocks are freshening; some, indeed, fit to kill: they don't seem to suffer so much from the flies as the horses or camels. Two of the latter (the Melbourne ones) had their backs slightly bruised, and although constantly attended to take a very long time to recover.

Nov. 15.—At daylight thermometer stood at 54°. At five in the afternoon it stood at 100°.

Nov. 16.—Wind E. at daylight; thermometer, 63°. At 2 P.M. thermometer in sun, 140°. At sunset, quite a calm.

Nov. 17.—Calm at daylight; temperature in open air, 68°; at 8 A.M. slight breeze from N.; thermometer in sun, 118°; at noon, 160°, with wind from N.W., with a number of thunder-looking clouds. At sunset, temperature 97°; still cloudy.

Nov. 18.—At daylight, calm; temperature 73° in open air. At 10 A.M., temperature 143° in the sun, out of the wind: wind from N. to N.W. At 20 minutes to 11 A.M. temperature 154°; at noon, cool breeze, temperature 146°; at sunset, light breeze from N.W., temperature 102°.

Nov. 19.—At midnight blew a strong gale from S.E., accompanied by a very little rain. A good deal of lightning and a little

thunder from the southward of west, round west, and north of west, and apparently raining.

Nov. 20.—Wind working round from south of east to north of east. At 6 A.M. temperature 84°. At 1 P.M. wind fallen, and changed to W.N.W; temperature 98°. 1·30 P.M., wind suddenly chopped round by W. to S., from which quarter till dark it blew quite a gale, causing the lake to recede about 600 yards further north.

Nov. 21.—Quite a calm. The water in the lake has returned to its old bed. From a long conversation I had with a native yesterday, who came to the camp, I am led to believe that only one of the whites was murdered at Lake Cadhibaerri, at the time of the attack upon them by the natives there. On the return of the party from the N.W., they repulsed the natives, killing some and wounding others: the party buried their comrade, and marched southward. The natives, on seeing that the whites had proceeded onwards, immediately returned to the scene of the disaster, dug up the body, cut off all the principal muscular parts, and feasted upon their revolting repast. So minutely does this native know all their movements that he has described to me all the waters they passed, and others at which they camped, and waters that they remained at for some time, subsisting on a sort of vetch-seed that the natives principally use here for food, and obtained in large quantities on many of the flooded flats by sweeping it into heaps, then winnowing it, then grinding or pounding it between two stones; then mixing it with water into the consistency of damper; and, finally, making a cake, and putting it into the ashes, the same way as damper: when cooked and fit for use, it tastes rather strong; but no doubt they could live upon it for a long time, as it must be wholesome. That, with the game and fish they could get from the waters of the creeks and lakes, would keep them alive very well, if they did not further attempt to make their way to the Darling (which the native says they did); but I hope soon to see, and trust they have not attempted to do so. One thing I cannot arrive at is, how long, or how many moons it is since they were attacked at Lake Cadhibaerri, as I then could form a much more accurate idea of the truthfulness, or otherwise, of the native's statements; but it must be some considerable time, as the body I found was perfectly decomposed; and on the skull even there was not a particle of skin, but as bare as if it had lain in a grave for years.

Nov. 22 *to* 26.—Still in camp; nothing noteworthy.

Nov. 27.—Calm at sunrise, temperature 60°; at 9 A.M. 116° in the sun; at one P.M. 118°. Got the horses in the forenoon, and went east 3½ miles; first ¾ of a mile over sandhills, rest of the way

over flooded ground to Go-de-rannie Creek; not much water now; then to Pal-coor-a-gannie. At present this is the dry bed of a small lake with plenty of dry clover and grasses in the dry bed. On the north-east side of the lake is a well, dug by the natives, about 10 to 11 feet deep, with about one foot of water at present in it, and good. I suppose a considerable quantity could be had, if the hole were enlarged. Close by there was an encampment of blacks, in all about a dozen, not the same apparently well-fed fellows that frequent the lakes and main creeks. From inquiry it appears that during the dry season this is the sort of water they have to depend upon; and I think the wells are few and far between. A high sandhill was some little distance off, and to it I went, from the top of which I had an extensive view. Could see nothing northward and westward but a jumble of lower sandhills, looking very dreary, without even a creek with its timber to break the monotony of the view. From the top of the hill there was water at a distance of $1\frac{1}{2}$ to $1\frac{3}{4}$ mile. Go-de-rannie Creek is deep, with abundance of fish of various sorts, and drains all the creeks that fill our depôt lake, and the creek to the w. of the lake over the sandhills. Started the black fellows and whites to dig a well close by the depôt before I went away this morning. At 8 feet 8 inches struck water (good). *Distance*, 16 *miles* (*from depôt*).

Nov. 28.—Finished the well, which is now 9 feet 6 in. deep, $3\frac{1}{2}$ feet wide, and 5 feet long. For the first 4 feet it was a mixture of light-coloured clay and fine sand; next $3\frac{1}{2}$ feet was a mixture of gypsum and blue clay; next to bottom a little clay mixed with chiefly fine sand; then the water seemed to come in from all quarters.

Nov. 29.—At 9·30 A.M., Mr. H. and party arrived safe. By him I received Adelaide papers, in which were Melbourne telegrams, one of which announced the rescue by Mr. Howitt of one of Burke's party, King, so that I have been deceived as to appearances at Lake Cadhibaerri, respecting the different colours of hair found. By receipt of such intelligence, and that now the whole of the unfortunate party are accounted for, it renders my journey to Cooper's Creek, as I intended, useless for any purpose of relief. I am quite surprised that they could not get south by Strzelecki's Creek, being under the impression that two-thirds of the water of Cooper's Creek was drained off by that watercourse southward. My impression from observation here is, that a very great portion of the waters of Cooper's Creek is drained northwards from this. Before leaving this, it is my intention to push eastward some distance to ascertain the character of the country, and on my return to push westward for some distance to ascertain if the stony desert exists so far southward as this. I shall then proceed northward, and examine the waters reported by the natives to exist in that

quarter, and ascertain if they are likely to be of permanent use to South Australia. I am now satisfied that water can be had by digging. At 5 P.M., depth of water in the well 15½ inches; the water very hard and clear, quite the opposite of the lake, which is very soft, and rather milky in colour. Highest temperature during day, 120°.

December 2.—Start out eastward with party to examine the country, with sufficient food for 1½ week. My object in going out now is, first, to ascertain if there is a likelihood of a flood down Cooper's Creek this season, after all the rain that has fallen along the eastern side of the continent some months back, and which I thought possibly might have fallen as well on and to W. of coast range, so as to secure to us an open retreat in the event of our being able to make some considerable advance northward, and being detained some time; and, secondly, if any one was yet stationed on Cooper's Creek, to intimate to them my intentions of proceeding northward for some distance, and the almost certainty of crossing any track that either of the search-parties from the northern coast could possibly make *en route* to Cooper's Creek, or even Eyre's Creek. Passed through nothing but sandhill and flooded flat country till we arrived at Tac Wilten Creek, containing little water, but drinkable. This is a long, narrow strip of water, not deep, and drying up fast. Crossed creek again, and went to Aunrinnie. The water here, although enough, is quite unfit for use, the horses and camels refusing it; but there is good green feed in the flat. *Distance about* 25 *miles.*

Dec. 3.—Started at 8, and in first hour made large lake, dry, Cullamun by name, destitute of vegetation, and no margin of trees; passed over sandhills and flooded flat, to a creek very broad, deep, and well defined by timber, and trending northward: not much water at present; good here, but unfit for use above and below, like that of last night: creek called A-ga-boog-ana. Passed through large flooded swamp, Narrogoonnoo Mooku, with no marginal trees: southern end a good deal of cane-grass; then large cracked flooded plain, Wandra-brin-nannie, till arrived at a creek with no water: crossed and rode up creek on south side to east of north to Barka Water, no feed: got down into the bed of the creek and rode up about ¾ of a mile to a water called Moollaney, pretty good; no great quantity, and but little feed. A lot of stones of a fruit found here, of a very ornamental little tree, from 6 to 15 feet high, which I have secured. *Total distance about* 25 *miles.*

Dec. 4.—At or rather before daylight, Middleton, in attending to the camels, unfortunately got his foot seriously injured by a considerable-sized stick which was stuck in the ground; its end penetrating deeply into the foot as he was returning to the camp,

down the steep bank. I am afraid I will have to go back with him; I have pulled out several ragged pieces of wood from the wound; a lot of small tendons protrude. I will try one day up the creek, and see if he can stand it. Started, leaving creek on right; crossed small flooded flat to sandhill; then good low sandhills, firm travelling; passed a water called Appo-more-millia, about 1½ mile to our right in the creek. Crossed creek in the centre of a cracked flooded flat, bearing to the north by west; passed over sandhills and a heavy flooded cracked and timbered flat, in which is a creek bearing north-east, with sandy hillocks and native wurlies. Bore south to creek Goonnooboorroo, with little water. *Distance about* 16 *miles.*

Dec. 5.—Obliged to camp with Middleton. On a large gum-tree marked "MK (conjoined), Dec. 4, 5, 1861." One large creek comes in here from the south; and immediately below this, about 100 yards, another from same quarter. Bronze wing and crested pigeons here; also, some beautiful parrots, black ducks, teal, whistlers, painted widgeons, and wood-duck in small number; also parroquets and quail. Some dry grass here on top of banks up to my waist; further out there are some good tussocky grasses, and there has been plenty oats. Secured seeds from the bean-tree, and the stones of the fruit before alluded to. Fish in water here, although there is only a small quantity and drying up fast. In looking for the horses in the morning up the main creek, found, about three-quarters of a mile from this, where Burke had camped in the bed, and had dug for water. From the appearance of their camp, and quantity of camel-dung, he slept more than one night. here. I think when they camped there, there was water both below and above; it is now quite dry, however. A small quantity of sewing-twine was found at this camp.

Dec. 6.—Middleton's foot a little easier; thought of returning, as he is quite unfit for work, but have made up my mind now to go on and ascertain the facts I went out to obtain. I therefore started for the upper waters of the creek, keeping on the south bank; crossed several creeks until noon, when we found in the camp, a little above Pardulli, a gum-tree marked—"W. I. Wills, N.N.W., xlv. yds., A. H." Turned out our horses here for some time; between the last crossing of the creek and this, I got a view of a couple of red sandbluffs, and distant sandhills or hills of some kind to north-west. Started from Wills's grave and crossed creek; struck the creek again, with plenty of water to Howitt's camp, 32; thence on to Burke's grave, striking dry creek, and following it to Yarrowanda; arrived there at 7·10 P.M. (*Distance not given.*)

Dec. 7.—Started at 7·7 A.M., and came to Burke's grave—about 2 miles on the south bank of creek. On the north-east side of a

box-tree, at upper end of water-hole, native name Yae-ni-mem-gi, found marked on tree—"R. O'H. B., 21-9-61, A.H." Deposited a document, in case of the return of any party. Saw a cobby horse on arrival here last night; tried to catch him. Saw the tracks of cattle up the creek, short distance from him; they had gone further up the creek to a water, Culimuno.

Dec. 8.—Started back for camp; passed large numbers of natives; made for heavy creek that joins another at Strzelecki's Creek, and camped at a water called Tac-durrie, a small water about 2 miles from Goonaboorroo in the main creek. (*Distance travelled to-day about* 27½ *miles.*)

[*Copy of Document left at Cooper's Creek, dated 7th Dec.* 1861.]

To the Leader of the party sent out for the remains of the lost Burke and Wills, but more especially to the Officer in charge of the Depôt likely to be formed on this creek—

Sir,—I beg to state that I have had communication with Adelaide, and have received papers from there intimating the relief of King, the only survivor of the Melbourne Gulf of Carpentaria party, and an announcement that the Melbourne Government were likely to have the remains of the late gentlemen removed from this creek to Melbourne, to receive a public burial and monument to their memory; and at the same time stating their intention of establishing a depôt somewhere on this creek to await the arrival of one or other of the parties (in search of the late Burke and Wills) from Rockhampton, or the Albert, on the Gulf of Carpentaria. I beg to state I am with my party stationed on a lake about 85 miles westerly of this; and immediately on my return there I start northward, and for the first part of my journey a little to east of north, and will, at every suitable camp on my route, bury documents conveying the intelligence meant to be conveyed to either of the parties, by the depôt party likely to be formed here, of the fate of the late party; by which means they will be put in possession of the facts, and can return to the Albert, or go on through to Adelaide. There is, at present, and will be for some time to come, easy access to Adelaide by my route, which the wheel-tracks of my cart have clearly defined. By this means of intimation to the parties in question, it will relieve the party about to be stationed here from the necessity of passing a summer in this hot region. My course will intersect any course either of the parties out from the northward can make between Eyre's Creek and the late Burke's depôt on this creek.

I beg to remain, &c.,

John McKinlay,

Leader of the S. A. B. R. Expedition.

Dec. 9.—Followed creek down and passed Goonaboorroo water-hole; passed flooded cracked flats and sandhills to Molanny Creek. *Distance travelled to-day*, 17 *miles.*

Dec. 10.—Crossed creek, over sandhills, then through bed of large dry lake or swamp; name of swamp, Wando Binannie; a good deal cracked, and bad travelling. From thence through low sandhills, flooded box-flats, steep sandhills; crossed Narro Dhaerrie swamp; crossed creek at east end of main water, drying up fast. Crossed creek twice, and camped on south side of lower end of Tae Welter. (*Distance not given.*)

Dec. 11.—Crossed creek and flat: over sandhills and flooded flat, with large salt-bush and polygonum; timber to the right, and some samphire-bushes; crossed my old single track, with alternate sandhills and cracked flooded flats, and arrived at our depôt camp on Lake Buchanan. *Distance, about* 19 *miles.*

Dec. 12.—Remain in camp; temperature at sunrise, 68°; wind east; 11·30 A.M., temperature 165° in the sun out of the wind; very hot indeed, and wind north-east; dead calm at 6 P.M.; temperature, 100°; sun overcast; temperature at sunset, thermometer exposed to sun and wind, 90°.

Dec. 13.—Dead calm at sunrise; temperature, 64°; at 7 A.M., wind north-east, temperature 102°; at 9·15, wind north, temperature 150° in the sun and out of the wind; at 10·30, temperature 158°; at noon, wind west; temperature, 138°; sunset, temperature, 95°.

Dec. 14.—Started over sandhills and timbered flat, and creek running north, about 200 yards wide; passed end of very stunted box-tree flat running parallel to our course, and camped on creek with little water. (*Distance not given.*)

Dec. 15.—Passed through long dry grass with scrubby box; then flooded box-flats to Pal-coor-a-gannie, and reached depôt at 6·5 P.M. It blew quite a gale of wind during the day from S.S.W., with dust and a few drops of rain.

Dec. 16.—Wind east (strong); temperature at 7 A.M., 65°.

Dec. 17.—Deposited memos. to Chief Commissioner of Crown Lands, and finders of deposits, under a tree here marked "MK (conjoined) from Oct. 20 to Dec. 17, 1861. Dig. ↑." Started and crossed north end of swamp; then small sandhills; then creek or watercourse, cutting a course at right angles; passed south end of considerable sized flooded flat, connected by last-named watercourse. Pole of cart just broken. Left cart and proceeded with some of party to Goonyanie Creek. Great difficulty in getting a suitable stick for the pole; sent back to our late camp, on Coody-gody-annie, to get a pole there, but none to be got. Hunted Goonyanie Creek up and down myself with but indifferent result, but must cut one such as is to be found and make shift with it, till

a better can be procured. A great number of natives here; the creek northward ceases ¼ mile from this, and loses itself on a polygonum-plain—no doubt, forms again. South of this it continues for aoout 1½ to 2 miles, and is lost on flooded flat. There appears to be a great quantity of fish here, some very fine ones being caught this afternoon, one of which must have weighed from 4 to 5 lbs. (a perch). Although the water here is very much reduced since I came here about the middle of October, the water in two holes is yet pretty deep; no great quantity of grass here.

Dec. 18.—Unable to proceed.

Dec. 19.—Still detained.

Dec. 20.—Marked a tree, on north bank, "MK (conjoined), Dec. 17, 18, 19, 1861." Sky completely overcast. Started, and passed through flats, till we came to a creek, where we stopped for a short time; crossed creek to the margin of a lake bed, containing some water. Went north some distance to get round the lake to where the creek is dry. This creek fills this lake—Goonaidrangannie. Camped on north-east end. There are a great number of natives here; the water appears very deep. Mr. H. swam out about 300 yards with a plumb-line, and found the depth 10¼ feet; but further south and east it is much deeper. This lake must be at times a great rendezvous for natives, in extreme drought. One of our best working bullocks, before he came 10 miles, was killed by the heat. He will be a serious loss to us out in such a country, where we require a spare bullock to spell another occasionally. A good deal of thunder and great indications for rain, but blows off with only a few drops; quite a hot wind from north, and altogether has been a very disagreeable day.

Dec. 21.—Came through some splendid feed to another lake, containing but very little water, and that quite bitter. Start for Moolionboorrana at 3 P.M., and arrived there at 5·53 P.M. Distance about 12½ miles; first half distance was flooded flats and sand-ridges. On our way to Thoorabiengannie, at 4½ miles, made the bed of a dry lake, Tiedhenpa, with splendid feed and park-like appearance, of considerable extent. The remaining part of the distance was alternate low sandy hills and flooded narrow flats. Distance, about 11 miles. Exceedingly scant of timber. Innumerable pelicans and numbers of ducks, gulls, waders, cormorants, fish, and pigeons, and abundance of green grass; but no shade or protection from the extreme heat of the sun. Rain has fallen here some short time since, small quantities being still in the claypans; and from the cloudy appearance of the sky, with thunder, to the north, I fancy it has fallen heavily in that quarter.

Dec. 22.—Unfortunately the thermometer got broken yesterday, which will prevent in future our ascertaining the temperature of the interior, which is much to be regretted, as no doubt it would

interest many. This lake is circular, and almost without timber; but is a fine sheet of water, and will stand the weather well. There is a great deal of soda in it. It is about 2½ to 3 miles long from north to south, and about 2 miles from east to west; the creek that supplies it (filling it from north-west end) comes from north.

Dec. 23.—I started with native at the same time, and reached the creek Gadhung-oonie, with a considerable quantity of water, and fully half a mile in length; but so thoroughly bitter and salty that it was quite unfit for man or beast. Came over some seven and a half miles of country to Watthie-gurtie, which is also salt and bitter, and started then for Caun-boog-o-nannie. Passed in my way two salt-lakes to the south with salt water in them, respectively named Ano-dhampa and Thoor-pa-linnie; passed also to north a recently dried-up lake, named Gnooloo-macannie, well timbered round its shores, with abundance of grass all over it. Arrived at a lake (Caun-boog-o-nannie), where there are splendid water and feed. This lake also is nearly circular, and about 2½ to 3 miles in diameter. The cart could not get further than the last bitter water we passed to-day. Immediately south of that is the dry bed of Lake Uil-go-barrannie, and immediately on the north-west side of that lake is the dry bed of Lake Caun-marrie-go-teinnie. This little creek, flowing nearly south, fills Abbe-ring-annie lake, now nearly dry, and lakes Ano-dhampa and Thoor-pa-linnie—both at present filled with water, but unfit for use; plenty of good feed round all.

Dec. 24th.—At daylight, sent Mr. Hodgkinson to the cart with a pack-horse and two canteens of water, and to point a more firm place for the cart to cross "Watthie-gurtie" Creek than where we crossed the camels and horses, it being very boggy. A vast number of natives here, and, upon the whole, about the finest race I have seen in the Colonies, and at present apparently friendly. Any quantity of fish, and hundreds of pelicans. This country is fit for any description of stock, and, with anything like a moderate supply of rain, would be most excellent country; even as it is, it is not equalled to the southward as far as Kanyaka, Mr. Phillips's station, near Mount Brown.

Dec 25.—Christmas Day; wind variable, principally from the south, but warm. Natives were prowling in numbers about our camp late last night. I sent up a rocket that exploded well, and had the desired effect, causing a general rush of the whole of the sable gentry towards their camp, which latter, in their fear, did not check their mad career until they found there was no pursuit; but to-day they again came up to our camp quite unconcerned, as if nothing had happened—better it should be so, as no doubt I shall find them of great use in pointing out the principal waters within their knowledge. Spelling, to recruit everybody and every-

thing, and hope to make a good start to-morrow morning. Had an excellent dinner of roast mutton and plum-pudding, and did not envy any one in Adelaide.

Dec. 26.—My course is right through north end of lake, bearing 89°, for Lake Dhalinnie. At 2½ miles came to creek that falls into this one we are now encamped on; went up it half a mile north-east to cross it; sent the cart round by the creek, to be on level ground, whilst I went direct to Dhalinnie. At 4½ miles, clear the lake, and at 3½ miles further, arrive at the Lake Dhalinnie—a treeless lake, fully a mile from north to south, and a little better than half a mile from east to west. Appam Barra, from this, bears 4°, Cann-boog-o-nanni Camp, 269°. Got east to Appam Barra Creek, well filled with water, going N.N.W. from N.N.E., then round to S.S.E. and south, in the distance filling a few lakes in its course on coming from the first quarter. Went on the N.N.E. course 1¼ mile; camped immediately beyond where a branch leaves the main creek, going southward—a good sized creek, about at its junction 70 yards wide, and 15 feet deep; main creek about 100 yards wide, and 20 to 25 feet deep; lots of mussels, crayfish, and fish of all sorts. No great abundance of feed here, nor is the country so good as has been passed, having a very desert and sterile appearance, with a jumble of sandhills, flooded land, and a considerable quantity of samphire-bushes, large salt-bush, polygonum. and other shrubs. The natives (a fine body of men), whether from curiosity or otherwise, were with much difficulty kept away from the camp at night. (*Distance not given.*)

Dec. 27.—Half of the horses broke and lost their hobbles; and the loss of chains is serious, as they cannot be replaced here. Detained all day.

Dec. 28.—Not a breath of wind at daylight. A large flight of gulas just passing. Gulls, pigeons, and ducks of all sorts abound. It was my intention to have taken the cart round to examine the lakes and creeks east and south of my present position, but, as the sandhills are rather large and steep, I will do it with the camels and horses, and merely to-day take the cart to a better place for camping during the time I am engaged at this work. Marked tree at camp, "MK (conjoined), 26, 27-12-61." Start at 7·30, and went round northward 1 mile, and crossed creek at 4 miles; get to a pretty little lake, "Watti-widulo." Abundance of good feed and water; natives round the lake; but on going about half-mile to top of a small sandhill, I then had opened to my view an extensive basin of water, forming part of the lake, continuing far off to south-west by south. A splendid sheet of water, which I have named Lake Hodgkinson, after my second in command. Course to-day N.N.W. (nearly). The country travelled over to-day, though a short distance, was very good—plenty of grass on the sandhills

of a good sort. Although that veteran explorer Sturt must have passed not far from this in his last attempt to gain the centre of the continent, he reported to have only fallen in with, or had reason to believe there were, but few natives. How the large body of people that is scattered all over this part could have escaped him, I cannot account for. Go where you will, you will find them in groups of fifties and hundreds, and often many more, and generally a jolly lot of fellows, and all in capital condition. As has been noticed by former explorers, the females amongst the children are much greater in number than the males, but neither very numerous. Amongst the adults (both sexes) they knock out the four front teeth of the upper jaw; but there are others, both male and female, that are quite perfect, more here than noticed anywhere else on the journey. Killed a sheep on arrival here to-day to jerk for our coming journey to the east; but was so fat, that the small flock had to be examined for a poorer one for that purpose. That does not speak badly for the part of the country we are now in. (*Distance not given.*)

Dec. 29.—Camp at Watti-widulo, or Lake Hodgkinson. Just where we are encamped by it, it does not appear to be deep, but to the south and west I fancy there is a good deal of water.

Dec. 30.—Started east, with a week's provisions. At 4½ miles got to Appam-barra, near old camp at the dray-crossing; thence to about 1 mile west of dry lake Toondow-low-annie; centre bearing of lake, north and south, 3 miles, by a width, east and west, of 1½ mile; well grassed. At 10¼ miles passed south end of lake, and travelled on flooded ground on west side of Cariderro Creek, in which there is water, to where we cut the Cariderro Creek, about 16 miles, at a place in the creek where a large creek branches off east, and fills a large lake, now dry; abundance of feed. To lake called Mar-cour-gannie, and found water in creek—a short distance south, from which quarter it appears to come—it is a splendid gum-creek, from 80 to 100 yards wide, and 15 to 20 feet deep, and flows a northward course. Thence went 1¼ mile to Appa-dar-annie, now a dry lake, with abundance of good feed in its bed; then went south by east 8 miles, along the Cariderro Creek. It is well lined with fine gum-trees, and, as far as we went, I may say, was one continuous sheet of water, and with not less than from 200 to 300 natives. I have named it Browne Creek. Many of the natives have apparently quite white hair and beards; they were particularly anxious that we should encamp with them; they were the first tribe that we fell in with so fully armed, every man with a shield and a lot of boomerangs, and some with spears. I thought it better not to camp there, as there was a good deal of sneaking, and concealing themselves from bush to bush, which might have brought about a disturbance, which I did not desire. Took some

water in air-bags, and started out from the creek, 1¼ mile; then to Appacal-ra-dillie Lake, 7 miles fully. Crossed, and camped on east corner of dry lake Mar-cour-gannie, and on the margin of the dry lake Merra-daboo-daboo; the bulk of this last lake bearing north from this, and splendidly grassed. *Distance traversed*, 33½ *miles.*

Dec. 31.—To Appacal-ra-dillie Lake, through side of Lake Merra-daboo-daboo; passed several flooded flats proceeding east from last-named dry lake—the first of which was an extensive one, passing on our course from left round to the right, and apparently round to south as far as visible, then over alternate and indifferent flats and large sandhills—a considerable deal of flooded land to the westward. At 15 miles arrived on top of a very prominent sandhill, which I have named Mount MacDonnell, from which hill opened out to our view two beautiful lakes, which in honour of the present Governor of South Australia I have named respectively Lake Blanche and Lake Sir Richard, separated by a small sandy rise, through which passes a small channel that connects them, and which I have named New Year's Straits. *Distance*, 15 *miles.*

January 1, 1862.—Started at 6·45 round the first lake, Blanche (Lady MacDonnell), to where the creek passes through a low sandhill and connects it with the other lake, Sir Richard. The first-named of these lakes is, where it was tried, between 5 and 6 feet deep, and 7¾ miles in circumference, nearly circular, bare of timber, and tens of thousands of pelicans on it, one solitary swan, with innumerable other birds, gulls and ducks of various kinds (one new and one dark-brown large-winged), cormorants, avocats, white spoonbills, crows, kites, pigeons and magpies of various kinds, and plenty of fish. The other lake immediately adjoins, and its south-east end is more to the eastward than Lake Blanche; it is nearly circular, and is 6¾ miles in circumference, but when casually tried was not quite 5 feet deep; pelicans, birds of kinds, fish, &c., as the other. Between 40 and 50 men (natives) came to meet us as we were passing round the lakes at the creek, which they had all to swim, and from the appearance of the camp, some short distance off, there could not have been less than about 150, all apparently friendly. Started from north-west end of Lake Sir Richard, and went along the course of the creek that fills these lakes on a bearing of N. 55° W.; then S.S.W. ½ a mile, to a fine basin of water in the valley of the creek, ¾ of a mile wide, and more than that in length, and opening again and contracting alternately up to Lake Blanche, which, in honour of the veteran explorer, I have named Sturt's Ponds; abundance of fish and fowls. From this point, course N. 52° W. up the creek for 4 miles; at 2 miles a creek went off to the right through a flooded flat, thence on a course varying from W. 36° S. to W. 21° S., principally through what was recently

a large lake, now a splendidly-grassed plain of vast extent, and at the latter part a few small sandhills. *Distance to-day*, 36 *miles.*

Jan. 2. At camp.—It is quite a treat to sit on the banks of this fine sheet of water and look at the innumerable waterfowl on its surface chasing their prey.

Jan. 3.—Started to examine some lakes and creeks to west and south of this position. On my return moved camp to a better place on this lake, north, on the opposite side, where there is better shade, and the glare of the sun less injurious. Started to examine lakes reported to be south and west. At 6 miles, arrived on opposite side of where we camped for the last few days, and estimate its circumference at 15 to 16 miles, its greatest breadth 2 miles, its east about 600 yards. A large creek fills it from S.E., about 2½ to 3 miles W.S.W. from our New Year Camp—a deep swimmable creek, well timbered, plenty of fish and fowls—then went southward to Lake Watty-garoony, a fine deep lake, quite 9 miles in circumference; scant of timber; abundance of feed. *About* 8 *miles.*

Jan. 4. Camp, Lake Hodgkinson.—Shoeing horses, &c.

Jan. 5.—Went out north to see what the country was like. On bearing N. 10° W., over sandhills, arrived at and found lake dry; 4½ miles of stones around it, same as in stony desert; went through the middle of it, as it sweeps round from N.E. to S.W.; passed through it where it was 2 miles broad; it is fed from Lake Goonalcarae (now dry); the lake passed through has not had a supply of water for years apparently; dead mussels and crayfish in its bed. Changed course for large sandhill in the distance, the country to the north rather low. At 2½ miles on this course came upon a succession of flooded basins, some of great extent, and slightly lined with stunted box, some as high up the sides of the sandhills as 45 to 50 feet, but neither water nor vegetation; which formation continued till I went 9 miles on this last course, and, from the top of the hill, could distinctly see the beds of innumerable others of the same kind. On bearing of S. 7° W., at 5½ miles on our return, came to the watercourse that supplies the dry lake Marroboothana from Goonalcarae, which I have named the Ellar, and the creek that fills it, in which there is at present water, Ellar's Creek. *Distance traversed*, 20½ *miles* (*out*).

Jan. 6.—Started at 6·30 for Lakes Blanche and Sir Richard, for the purpose of following the creek I observed when there the other day, and which the natives inform me goes northward, then westward and southward, through the stony desert. Arrived about 3·30 by rather a circuitous route to the northwards of our proper course, but was guided that way to avoid many heavy sandhills. *Distance, between* 22 *and* 23 *miles.*

Jan. 7.—At Lake Blanche; went out north to examine the creek alluded to, but found that it only formed a large valley, and,

at some distance on, a dry lake, Millie Millie, to the eastward of Lake Sir Richard over some high sandhills. Have made up my mind to stay here a short time, and endeavour, with the camels, to ascertain the description of country first to the east, and probably also to the north. From the appearance of the country about here I do not expect any water at least for some distance; the land low hills between the two lakes, and running northward for some 5 or 6 miles, have just the appearance of dirty drift snow-heaps with heath-bushes protruding; whereas those round to north-east, east, south, and south-east, are a glaring red, with coarse grass and shrubs.

Jan. 8.—Moved camp about ¾ of a mile.

Jan. 9.—Camp, Lake Blanche, between the two lakes, where one would imagine the breeze from such a body of water would render the air cool, but the heat is almost intolerable.

Jan. 10. Camp, Lake Blanche.—One would suppose that after so much thunder and lightning the air would be more pure and cool, but nothing of the kind was apparent, nothing but intense heat, prostrating all the animals. Wind light, easterly.

Jan. 11.—Wind chopping all round the compass; intense heat; fleecy clouds.

Jan. 12.—Cloudy during the day. Wind from all quarters, heat intense, and sultry towards evening, threatened much for rain; wind from east to north-east, accompanied with thunder and lightning.

Jan. 13.—Wind from all quarters, but rather more cool.

Jan. 14.—Eastward to-day, over undulations, sandhills, clay-pans, and flats, for 19 miles, till we reached a very prominent high hill, which I have called Mount Wylde. A considerable range is visible to east, and south of east. Went on for 7 miles further over sand-ridges, covered with spinifex, successive box-covered flooded flats, formed by heavy rains, through which were innumerable small creeks, no doubt, in heavy rains, forming source or tributaries to Cooper's Creek. East, in the far distance, I can trace the continuance of the range. *Distance travelled to-day, about* 26 *miles.*

January 15.—Followed over hard sand undulations, well-grassed, with some little spinifex intermixed, with a creek on our left, and crossed it at 8 miles, going south-east—gum and box on creek, and a sandy bed. We then passed over some good grassed country, with stony flats, and latterly a stony sandhill, the ascent difficult for the camels on account of the sharp stones for 10 miles. Low hills about 6 or 7 miles ahead, running north and south; nothing very marked about them. *Distance* 18 *miles.*

January 16.—Started for Mount Wylde. The greater portion of last night's and to-day's journey was over spinifex country.

Passed, immediately after starting, a couple of creeks, drainage to the north—whether they continued that course, and gradually swerved to the east and joined a larger one under the main range to east and so passed on to the southward to Cooper's Creek, or formed rainwater lakes (vast numbers of them here, and well timbered, and often visited by natives), I cannot pretend to say. Found some of the party laid up with dysentery. Have made up my mind to leave this, after 1 day's spell for the camels, and go back to different water, as this must contain some medicinal properties that I am ignorant of, as it affects all of us more or less.

Jan. 17.—Excessively hot and sultry to-day, and very cloudy.

Jan. 18.—Started this morning for Goonalcarrae Creek, or Ellar's Creek, where there is abundance of fine feed, water, and protection from the excessive heat. Passed, on our right, the recently-dried bed of a very nice lake, and so deceptive was it from its appearance some distance off that even the natives insisted that there was still water in it, but there was not any. The lake I have called Deception—it retains water for a very long time. I pushed on through the flooded and well-grassed bed of Goonalcarrae, or Ellar's Swamp. First went on a westerly course, then on a southerly, to the creek, but did not admire the water, which was neither abundant nor sweet, although there were innumerable birds and some natives there. Went on to Lake Hodgkinson, and was astonished to find it so much dried up in only 12 days, that being the time since we left it, and the water now quite bitter; then went on to Hayward's Creek, that fills Lake Hodgkinson, and there found abundance of everything that we required—feed, water, wood, and shelter from the broiling sun. The dray did not get this length, but camped on east end of lake, obtaining water for their use, by digging, at 4 feet from the surface, good and clear. I shall remain here till there is a change in the weather.

Jan. 19 *to* 21.—At Hayward's Creek Camp.

Jan. 22.—At daylight a Scotch mist from south; by 7 A.M. it came on a steady rain and lasted till 8·15 A.M., when it cleared off, still appearing to rain to north-east and west of this. Went round the lake to see what quantity of water was likely to be in the claypans where it fell the heaviest yesterday; there is not so much as I expected, but still I will start out north to-morrow to ascertain the nature of the country, and see if there be any watercourse in that direction that may hereafter be of use to parties wishing to pass to the north coast; but from what I saw to the east, and the country between that and this, I have very little hope of anything of the kind, but believe there is a creek to the westward of this that either comes from or goes to a latitude beyond and east of Sturt's furthest.

Jan. 23.—Started late; got to the top of a sandhill on north

side of Lake Hodgkinson, about 6 miles from camp; passed (dry) Lake Marra-boothana; then through flats and basins, a large one cutting our course. Changed course, and came to dry creek, called Pantyh-wurladgie; then over stony desert for a large sand-hill; a little water back about 2 miles, from whence we shall have to send for it amongst the stones. To the north-east and south all stones, but sandhills bound the two latter quarters; beyond the termination of large sandhill there is nothing visible. To the west is a succession of sandhills running north and south, and terminating in desert and stony plains. *Total distance travelled, about* 33 *miles.*

Jan. 24.—The water-supply for to-day is about 2 miles off in the desert; our journey being over a succession of very high sandhills and stony flooded flats; skirting, for the first three-quarters of an hour, the desert to this spot, with a large red-topped sandhill on our right which terminates close by; have not seen a drop of water during the day, and camp without it. A heavy timbered creek comes in from south-west into the desert, and appears in the distance to have a tributary from east-south-east; the timber ceases as it comes on to the open desert plain, between 4 and 5 miles from this. Quite an unbroken horizon to the west of north-west for some distance. *Distance travelled to-day,* 24 *miles.*

Jan. 25.—Started back and got to water just in time to give the horses about half as much as they could drink, and a little for ourselves; rapid evaporation has taken place since we left yesterday, for then there was enough for 100 horses, now there is not half enough for 8; so must make for one of the permanent waters south of this to-morrow. (*Distance not given.*)

Jan. 26.—Started for Coonhadie, a rainwater watering-place in desert, but found it quite dry; start for camp, Hayward's Creek, and arrived at 1 P.M. The water in the creek is diminishing gradually, about three-quarters of an inch per day. *Distance, about* 29¼ *miles direct from place to place.*

Jan. 27 *to February* 7.—At camp. Great numbers of natives. Lake full of fish; dug well 15 feet; last 8 feet through sand, but water proved salt, though it lathered with soap and water.

Feb. 8.—Splendid rain and steady. Thundering all round, with every appearance of a considerable quantity of rain, which will, I trust, come in such abundance as to enable me to push to the north-west across the desert, as up to this time I have been completely shut up here for want of a decent shower to enable me to do anything, and the provisions gradually getting less, although the ration is now as low as I can well make it. I have reduced it first from 8 lbs. flour per man per week to 7 lbs., then to 6 lbs., then to 4½ lbs.; sugar, reduced from 2 lbs. per man per week to 1½ lb.; and tea from 4 oz. to 3 oz. per man per week with

plenty of good mutton; but we find the supply of flour very scanty at the 4½ lbs. In the afternoon Mr. Hodgkinson and Middleton returned; they report having seen a considerable quantity of rainwater about 13 miles this side of Lake Goonaid-ring-innie, and plenty of water in that lake and good. Lake Moolion-boorana very much reduced.

Feb. 9.—Still raining, and ground too soft to travel over.

Feb. 10.—Started for Wattiegoroonita. Passed to top of a sandhill that rounds the lake, and over alternate sandhills and bare flats for 9½ miles, passing at about 6 miles on the last course a small salt-lake, called Warma-go-la-dhailie. The ground soft and heavy travelling. Camped at a few bushes to boil the tea-kettle, there not being a blade of grass; but a few salt-bushes are near, which the animals must do the best with for one night. Astonishing the small quantity of water passed for the last 8 or 9 miles. Distance travelled to-day, 24 miles.

Feb. 11.—Travelled for 9 miles over desert stony plains and got to top of large sandhill, called Canna-cannan-thainya. Some distance off another sandhill called Malla-poorpo-nannie, and another, not quite so far, called Cookorda. Another long leading sand-range in the distance called Goontyaerie, at the northern termination of which is at present a dry creek known by the above name. There is a native well there, and another a little further west. During the afternoon several nice showers. Distance, 9 miles.

Feb. 12.—Plenty of water lying all over the desert. At 6¾ miles distant got to Malla-poorpo-nannie sand-range, the southern end of which is called Cookorda. To the northern end of Coontarie sand-range, a creek and well by the same name; about 12 miles off, a detached sand-range in the desert, at the north-west end of which are two waters, named respectively Dhooramoorco and Moongaara; also on north-east side of sand-range another water in creek called Cadry-yerra, also a sand-range about 4 to 5 miles distant. At about 3 to 4 miles struck the flooded flat from the main creek I am now going to. At 11½ miles further came to and crossed a deep creek crossing my course at right angles. At 2 miles further came to water in Daeragolie Creek, same creek that I crossed before 2 miles from this; within this last 2 miles the whole flat is cut up into innumerable channels most difficult to travel over. Here there is not a green blade of grass to be seen; there are some green shrubs in the bed of the creek that the camels are fond of. I arrived at this camp at 2·5 P.M. This is an immense creek, timbered on its bank with box, bean, and other trees, the water is in detached holes, but good, and apparently plenty of fish and ducks. No natives seen yet, although their tracks are fresh; the natives that are with me say a number of

them have taken advantage of the rain lately fallen, and gone out to the sandhills on both sides of this creek. By native report the creek flows just here south and east, but within 2 miles from this it turns quite round by south-west and west, passing Coontarie. Distance, 23½ miles.

Feb. 13.—I spell to-day refreshing the animals. This creek is about 80 to 90 yards wide, very precipitous banks, and from 50 to 60 feet deep, with innumerable small creeks. About 400 yards from this, above us, a large creek leaves this one, heavily timbered and well defined. Limestone crops out in many places. It is from 50 to 70 yards wide and from 15 to 30 feet deep. The whole country looks as if it had been carefully ploughed, harrowed, and finally rolled, the farmer having omitted the seed.

Feb. 14.—Started early. On the west side of the creek Panbaera, a large creek leaves it at about 400 yards from camp. I camped on same side of creek, close to a deep water-hole in the creek. Name of creek Tooma-thoo-ganie. Immediately above the camp on opposite side of creek, a large red sandhill comes right on to creek called Manganhoonie, from the top of which one gets an extensive view of such country as there is. On our way here to-day, about 3 miles from camp, passed the remains of Burke's horse and saddle; they were recognised as his by camel-dung being about the camp. No marks on any of the trees visible. Camel-dung also close to our camp. Distance, 15½ miles.

Feb. 15.—If I get feed, must make a short day of it. Wind north, and disagreeable. The heat so oppressive and road so heavy, travelling completely out of the question. Will leave the cart and many sundries here. Habitations of natives are very numerous on the creek, so they must be pretty strong in number here. Lots of fish still in the holes; appear to be multa-multa principally. Distance, 5 miles.

Feb. 16.—Ill in camp.

Feb. 17.—Started late; flooded box-covered land for 1 mile. At 7½ miles further, passing over bare mud-plain destitute of any vegetation, with a couple of sandhills and the main creek beyond them to the east. On this distance, half a mile off, is the bed of a large creek flowing to the south and west, no water at present in it. Close to this point one of our best bullocks was struck dead with the heat of the sun, walking leisurely along carrying nothing; the rest of the party were much in advance, and as it was such a fearfully hot day and not a drop of water near, nothing could be done with the flesh of him unfortunately. At 5 miles further came to a large deep creek flowing westward, no water in it. Up to this point was to be seen in the distance westward apparent breaks in the sandhills, with box-timber in each; and I have no doubt many of those places form into large

creeks by the terrific overflow of this main creek. Thence over flooded flats and at some rain-water, where I camped. The flood here, when it does occur, fills the whole valley between the sandhills on either side of the creek, and after such occasions, must appear a splendid country; but, at present, no country could possibly look more desolate. This cannot possibly be Eyre's Creek, as it is much larger in the first place, and seems to bear away too much to the east ever to be a continuation of Sturt's Eyre's Creek. Traces of Burke's camels and horses are still to be seen on the creek; I fancy on his return from the gulf. Very ill this evening, hardly able to sit in the saddle. Distance, 16¾ miles.

Feb. 19.—Sent Mr. Hodgkinson and Middleton off up the creek to search for water, and Middleton to return after travelling about 8 miles, if successful in finding a supply to enable us to proceed further up creek; Hodgkinson to go further on and examine the creek, and return in the afternoon to where it was arranged we should camp. Middleton returned about noon, with the intelligence that about 7 miles up there was abundance of water in the creek for our immediate wants, where we camped. I went up the creek for 2½ miles, found it dry, and returned to water and camped. Distance, 7 miles.

Feb. 20.—Camp on east side of creek where the latter is upwards of 180 yards wide and about 80 feet deep, western banks very inaccessible, the east bank where we have camped, less so, with immense polygonum-bushes. Very unwell.

Feb. 21, 22.—At camp recruiting.

Feb. 23.—Rode out to the eastward to examine the country between this and the stony hills, visible from here on the east side of the creek; went 4½ miles over flooded flats, and a couple of sandhills, then 2¼ miles to top of another larger sandhill, then for 6¾ miles, over flooded flats, with a few smaller sandhills; then ¾ of a mile over one sandhill to top of rocky hill, from which the flooded flat I have just passed gathers together in the distance to a creek, and goes off on course of S. 15° E., and no doubt is the feeder of the waters now in the creek to south and east of our present camp, viz.—Barrawarkanya, Marroboolyooroo, Cadrityrrie, Meincounyannie, and Gnappa Muntra; then 2¼ miles to top of sandy and stony hill, with 4 or 5 mallee-trees and a few other shrubs. From this hill the creek passed by the end of a table-topped stone range, on bearing from 6 to 9 miles distant north-west and round northward to east, peaks and hills of stone with intervening flats, some of earth, others of stone, are visible as far as the eye can reach. In the evening Mr. Hodgkinson and Bell returned, having examined the hilly country, but could find no tributary joining the creek; saw water up some distance that will suit our purpose so far. *Distance (out) of day's ride about* 11½ *miles.*

Feb. 24.—Camped.

Feb. 25.—Started late, on same side of creek as that on which we were encamped, over flooded flats and sandy terminations; at $5\frac{3}{4}$ miles passed along and crossed a large deep creek in which there was a little water and a number of native wurlies. Course of creek nearly north and south. At $7\frac{1}{4}$ miles further over some abrupt sandhills, the summits of which had an almost perpendicular wall of pure drift sand, varying from $2\frac{1}{2}$ to 5 feet in height, and very difficult for the animals to get over, and flooded flats on same bearing; then for $4\frac{1}{2}$ miles, over similar country mixed with stone hills and flats, the creek being a long way to the west, but now gradually approaching our course; then for $1\frac{1}{6}$ mile to a creek, where luckily we found sufficient water for all purposes, and in the bed of the creek a better supply of green grass for the animals than they have had for some time. Distance, $18\frac{2}{3}$ miles.

Feb. 26.—At 9·30 A.M. was informed that one of the pack bullocks had dropped, and was killed to endeavour to make some use of his flesh. It has commenced raining, and what little will be got cannot, I am afraid, be cured, as there is every appearance of a continuation of rain, and there will be no chance of drying the flesh, as we have no salt. None of our journeys appear to give the sheep the slightest inconvenience; in fact, no party ought ever to go out exploring in the summer months without them. It is quite astonishing to see the patches of beautiful green grass on the slopes of the stone hills in the small watercourses that fall down their sides; in fact, the only thing like feed I have seen for some time, and what little there is, is in the bed of the creek. The creek here has an ana-branch that leaves it about $\frac{1}{2}$ mile above, and joins again about $\frac{1}{2}$ mile below; width of island $\frac{1}{2}$ mile.

Feb. 27. At camp.—Rained heavily and steadily all night from the E.N.E.; the ground at daylight a perfect bog. The creek, nine-tenths of which was yesterday dry, is now running a strong stream, and momentarily increasing. Got all the animals across during the forenoon, as the rain appeared likely to continue; and now that it has set in will most likely inundate all the low flats, and completely put a stop to further progress up the creek until the ground hardens a little. At such times the only places of safety hereabouts are the sandhills or stony hills; the latter I prefer. As soon as they were taken over the creek they were taken out accordingly to one of these ridges, and there left in tolerable feed, but not very abundant. The water is lying all over the flat in sheets, and the creek rising rapidly. It must have been a very long time since this part of the country has been similarly visited with rain, as the country generally, but especially the flats, had not any vegetation upon them of any useful kind.

Feb. 28.—Raining all night, but not quite so heavily; still very considerably. Our camp is like a stockyard in the southern districts much used in the wet weather—over our boots in mud and water; although on some of the highest ground just about here, pounds of mud and rubbish adhere to your boots every time you lift your feet. Creek considerably more swollen; and, as every place is so saturated with water and mud, will not move out of this till to-morrow morning. We are now in that position, and not far from the place where Captain Sturt dreaded being overtaken by rain. It is fearful to travel over, but must make the best of it. I am very glad indeed that we have been favoured with such a copious supply; although for a short time it may prevent my travelling, it will be the means of enabling me to move about afterwards as I may think fit. The creek rising steadily; by the morning it will be nearly or quite on a level with the way by which I shall have to travel in the morning for the high ground. It has a current of about 3 miles an hour, or similar to that of the Murray; for which reason I am led to believe that its chief source is some considerable distance away, although it receives innumerable tributaries on both sides, above and below where I now am. The rain as it falls upon these stone-clad hills runs off at once into the small creeks, thence into larger ones on the flat land, then into the main creek after filling the water-holes in their respective courses.

March 1.—At first blush of dawn, wind from same quarter (E.S.E.). Rained heavily all night, and to my astonishment, instead of the creek rising as usual ($3\frac{1}{2}$ inches per hour), it was now rising $5\frac{1}{2}$ inches, and hourly increasing. Although the creek has in many places overflown its banks, and consequently a much broader channel, we were completely surrounded with at least 5 feet of water in the shallowest place that we can escape from this by. After a breakfast by day-break, the animals were immediately sent for, and as the men started for them, drove before them our sheep for more than $\frac{1}{2}$ a mile through a strong current, and smimming three-fourths of the time; they went over splendidly, and were left on a piece of dry land until our camels and horses came and removed the stores, &c., which fortunately they did without very many of the things getting wet. The camels being brought in and loaded, and sent to where the sheep were first, I had two of them unloaded and sent back to carry to the dry ground any of the perishable articles, such as ammunition, flour, tea, and sugar, which they brought in safety; for had it been put on the horses as usual, and not being able to keep them on our track, the probability is they would have to swim, and completely destroy the ammunition and injure the other stores; the camels acted famously, and, from their great height,

were as good as if we had been supplied with boats. After getting all on to dry land they were repacked, and went on to a very good camp, now that there is water, on a sandhill about 2¾ to 3 miles distant in an E.S.E. direction, through a good deal of water and almost impassable flats—the sheep even sinking up to their bodies in the mud; however, we got them all over safely by early in the afternoon. Towards evening, a great portion of the flat is being covered with water from the creek, beyond the creek there is nothing visible but lines of trees, marking the course of the lesser channels, and stone hills, all else is a perfect sea. We were very fortunate to be caught in it where we were; had we been caught thus in making this creek, or a day's stage up it, to a certainty we should all have been washed way, or what would have been just as bad, been perched on a small island of sand with all the animals round us, and nothing but starvation staring us in the face—as on most of the sand-rises down near the creek, there was no vegetation of any consequence upon them. Distance, 2¾ miles.

March 2.—In camp; light showers occasionally. The side creeks from the hills running themselves out, and the upper parts drying; the line of creek visible in the distance through the trees during all its course now in view, and the flats considerably more covered.

March 3. At camp.—The country hereabouts is boggy; in the afternoon rode down to the creek through a good deal of water to ascertain the state of the flood, and had to swim some distance to get to the main creek; when I got there I was glad to find that not only had it, for the present, arrived at its height, but had gone down nearly 9 inches. The last time this country was flooded it was about 7 feet higher (perpendicularly) than it was this time, and the sand and stone hills were flooded for several feet up their sides from their base. This country is perfectly infested with wild dogs; and fortunately for us is it that I happened to have some strychnine, it plays great havoc amongst them; so voracious are they, that, when one of their fellows die, the others fall to and devour him; by this means many are destroyed.

March 4. At camp.—Rode out to some high stone hills eastward, to endeavour to get a view of the creek, and ascertain, if possible, from which quarter it principally flows. After getting to top of the highest, from which one gets very extensive view to the north-east, there was a slight haze that prevented my positively ascertaining its actual course; there is very heavy timber N.E. by N., and appears surrounded by hills. I shall travel in that direction first, and trust that it suddenly turns round to the north; from this last point, to a point 20° west of north, is a perfect sea,

nothing but isolated trees showing above the water; I found the ground exceedingly soft, almost impassable in many places. Abundance of sea-gulls, ducks, cranes, &c., about, and on the basins; seven black swans passed over the camp in their flight, bearing N.N.W.; no doubt to some lake in that direction. Some few days ago not a bird was to be seen scarcely, but a few kite, crows, and gulahs; now the whole country seems to be alive with ducks of various kinds, macaws, currellas, cockatoo-parrots, and innumerable small birds.

March 5. At camp.—The country beginning to have quite a green appearance, and the valleys covered with lilies in full bloom, birds singing and chirping all around, as if in spring. I am quite shut out, for the present, from Eyre's Creek.

March 6 *to* 9. At Escape, or No. 7 camp.—The stony hills and slopes (that from every appearance, a few days ago, from their thoroughly bronzed and desert appearance, one would suppose grass never grew) are now being clothed in many places with a nice green coating of grass, and shortly will give this part quite a lively appearance. In a couple or three months' time from this date one could with little difficulty (I am almost certain) start with a herd of any description of stock from the northern settled parts of South Australia and go right across the continent to whatever point he might think fit by this route.

March 10.—The journey to-day was over stony hills and flats crossing several small creeks from the more remote hills, some running tributaries of Burke's Creek, for 12½ miles, and for 3¾ miles further over similar country, but more flat as we are now approaching the creek, and camped on the outside of a flat with some water and a fair supply of feed. I was here before the pack animals arrived, but after waiting for them a short time found that in some of the small watercourses the water seemed to be driving, as I thought with the strength of the wind, as is not unusual, and took for the time no further notice; the horses came up first and were unpacked, the camels were some time after and did not arrive until after I had returned from a ride to the top of a hill further up the creek, at which place I went down to the water, and, to my astonishment, found that the whole valley was a perfect sea rising fast; on my return to where I had fixed the camp I found that the water had approached rather too close to be comfortable, and on the arrival of the camels had them unpacked some distance out on the top of a mound of stones, and had all the horse-gear removed there also. The camels travelled over the stones with their loads apparently quite unconcerned; they are undoubtedly the best of all animals for this kind of work, they eat anything nearly, from the gum-tree down to the smallest herb, and then come and lie down beside you; in short, with sheep and camels

one could travel all over any practicable part of the continent and keep them in condition. Distance, 16¼ miles.

March 11.—Where we had the packs removed from last night, and all over the flats, is a perfect sea of water, and even up within less than a foot of where I slept. From the creek having fallen not far from our last camp some days since, I was under the impression that I would find it considerably down the further I advanced up its course; but now I find that the cause of its fall then was purely local, from the tributaries immediately about and above having ceased with the rain to throw in a supply to keep it up. It now shows me that this creek must come from some very considerable distance; and I trust it may turn out to come from the north instead of too much east. Started for a gap in the range, over top of a stony range to a creek. High table-top ranges in the distance; then to top of red sandhill; then for 3¾ miles to top of sandhill over flat stony plains, with plenty of water and feed. From this point a perfect sea is before me. Came to camp on myall-creek, after passing two table-topped hills on left, and a peak and table-topped hill on right; beyond the camp, plenty of feed and water. To-day passed a native camp, the fire still burning, and their tracks quite fresh; but did not see them. Distance not given.

March 12.—Crossed several myall-creeks, over very stony ground; then over low chopping slaty and stony hills and several creeks; then for 8 miles over stony ground, very bad travelling; then for ½ mile, to camp on a frizzly-barked-tree creek. Passed several of the same kind of creeks to-day, with some timber: it is very hard, and some of it (from 3 to 4 feet in diameter) would make excellent furniture. From top of a hill, about a mile from here, looking over a sea of water, two openings to be seen in the sandhills beyond, to the northward, much as if one or other was the proper course of the creek; one with heavy timber, the other without so much timber, but broader and more like. Distance, 13⅜ miles.

March 13. Camp 10.—Clouds all gone; wind N.E. Started for gap in range, bearing 120°, for 4½ miles, over very stony country. On table-topped hill on the left, and the mass of ranges on the left, they look like the Reaphooks (hills) in the north of Adelaide, at Marrana. I have called the main mass of ranges Wills's Ranges, after the unfortunate gentleman who lost his life with poor Burke; then passed along and over sandhills and rich pasture, with cane-swamps full of water, to south-east termination of sandhills. Thousands of flock-pigeons, some teal, and a new duck. They have here commenced laying: several pigeons' nests were found as we passed along, and a duck's, with eight or ten eggs in it: plenty of quail and other small birds. Saw a bustard in the

midst of the sandhills to the north. To the north of this camp, a short distance, is a very strange round stone hill, capped with larger stone, which I have called Elliott's Knob. From top of one of the stone hills to right of gap in range a perfect sea was before me, over 157°, with nothing but here and there the tops of trees that line the creek discernible, and sand and rock hills forming islands; and in the distance to north and west the hills that bound the vast expanse of water appear like islands far off in the ocean. Distance, 12¾ miles. (?)

March 14. Camp 11.—Started to top of long stony ridges. For the first 2 miles through swamp and water, and sandhill, leaving on left hand a very nice lake, and on the right, some little distance off, a sand-ridge, running along swamp: in the distance, south, is timber, denoting a creek, which forms this swamp and lakes, then 3 miles of very stony and bad travelling. Immediately beyond me stretches a large dry bed of a lake eastward, with a considerable swamp to south, following the foot of a well-defined range, at the north-east termination of which range, visible from here, are several smaller and larger table-topped hills and gaps; then passing through an arm of dry lake: good travelling for 9½ miles, and camped on small sandhill at a claypan: the flood from 3 to 4 miles off to west of north; sandhills a-head. Distance, 14½ miles.

March 15.—Three and a half miles, over very heavy country, with spinifex and abundance of other grasses: 1½ mile further, same course, over stony and sandy rises. A splendid tier of table-topped hills in the distance, east and north; then over a flooded splendid swamp, principally, 4½ miles, to a box-creek. Distance travelled to-day, 12 miles.

March 16.—Went to have a view from the principal range eastward: the first and greater part of the road over magnificent pasture; nearer the hills very stony; found the hills distant 21 miles: from top of a large table-topped one I had a splendid view: the tier of ranges I am now on bear to east of north and west of south, but are very irregular, many spurs running off from main range, and forming a vast number of crown-shaped tops and peaked hills, with innumerable creeks draining the country from east and south to west and north, and joining the main creek. From this hill another tier of similar hills is seen in the distance, with a very large creek, draining the country between this and that, flowing northward, and then west, round the north end of the tier I am now upon, the south-east end of distant range, about 25 to 30 miles off, S.E. by E., and the north-east end, dimly seen in the distance, bears E.N.E., which tier of ranges and creek I have called Browne Creek. The range I am on, and the tier northward to where the creek (Browne's) passes round the end of them, I have

called Ellar's Tier of Table-tops: the tier south of where I now am I have called Warren's Tier of Table-tops: the plains or downs east and north of those ranges I have called "the Downs of Plenty," as here there is everything one could wish in travelling over a new country. I would have gone over to the distant ranges, but unfortunately my horse threw one of her shoes, and I was obliged to camp at a creek under the hills for the night. The creek I have now camped on I have named Ranger's Creek, after a bullock killed here. *Distance*, 21 *miles* (*round*).

March 17, 18, at Ranger's Creek camp.

March 19.—Passed through some magnificent country: one fine plain alone extended for several miles, and well grassed: in the distance could be seen high ranges. The weather magnificent and quite tropical; the perfume from the flowers quite refreshing. Camped on a creek; fine water. Distance, 16 miles.

March 20.—Travelled till we struck a large creek, and went on over fine flats and sandhills, covered with most luxuriant grass and several descriptions of creepers. The blue convolvulus was also seen to-day for the first time; also a most beautiful small blue flower, with a dark purple eye. Plenty of pigeons to-day; some few nests were found on the march. The mosquitoes very bad at this camp. Distance travelled to-day, 15 miles.

March 21.—Our journey to-day was over nothing but red sandhills; course about N.N.E.; had to cross a large sheet of water. Eighty duck-eggs were found to-day by the men. The country round about now is very fine, indeed; grass as high as the horses' knees. We now every day find fresh shrubs and flowers; everything reminding one of the tropics. Mosquitoes bad here, indeed. Camped on claypan, with little and bad water. Distance about 16 miles.

March 22.—Spelled at Claypan Camp.

March 23.—From Claypan Camp we cross flooded and stony flats with sand; then several box and myall creeks, to a white gum-flat, with not many stones, and trees not large. Thence over stony undulations, well grassed to top of a myall-creek; followed it down west one mile to plenty of water and feed. Camped: 16½ miles.

March 24. Camp 17.—Crossed a myall-creek or flat; broad, with several dry channels from N.N.E., draining a tier of fine ranges on the east—the only ones now visible to north or east—which I have called Scott's Ranges, the tops of which, especially the northern one, are well wooded. Over gentle slopes, some stony. Saw fifteen emu on one of the plains; so have named the plain and undulations Emu Downs; to a box-creek with abundance of water and feed. No timber except on the ranges and creeks. This appears a small creek compared with many in sight to north and west. A range continues to N.N.E. The creek from eastward to

westward and southward joining other larger creeks a few miles west of this. The whole of the country passed over to-day is excellent pastoral country. The north-east termination of Scott's Ranges, ending in two detached round-looking hills, bears E.S.E., about 6 to 10 miles off. Distance, 17½ miles.

March 25.—Crossed a box creek, with plenty of water, from north-east to west and south, sweeping considerably towards latter quarter. At 14½ miles, to box creek, dry where I struck it, and so to a creek with plenty of water, and camped. Our whole road lay to-day over beautifully grassed, very gently sloping, and undulating country; rising ground seen to the west, in the distance: flood must be some distance off. New hawk seen, light coloured. Distance, 16½ miles.

March 26. Camp 19.—Started on bearing N.W., to get closer to course of main creek, which I have observed nothing of for the last two days. Passed over splendid country, the latter part in the small watercourse; rather stony and sandy. Further on, fell in with a morass; to clear which had to pass to the east for some distance. Any traveller caught here in rainy weather, such as has been lately deluging these vast plains, would to a certainty be washed away: there is not a knoll 6 feet high within range of the eye. Distance to-day about 16½ miles, from point to point.

March 27.—First 9 miles over swampy country, with splendid feed; belts of timber on the right or east of course, studded in various places, denoting water-holes. Here fell in with impassable bogs, so passed to the eastward of them, to a perfect meadow of grass. From the top of a tree, hills in the distance to north, and south of east, discernible. I went out this evening and found that it is good travelling, and will thus allow me to get more in a northerly direction than of late. Cannot get within miles, as yet, of the main creek, on account of the boggy nature of the ground: there appear to be innumerable timbered creeks between this and that, all running into it: the water here, even on the level plains, is in places running a stream. Distance, 10¾ miles.

March 28.—Shortly after starting came upon a mass of creeks, occupying a mile in width, coming from south of east from hills in the distance. These creeks, no doubt, are one both above and below this, although now split into many branches. I have called it Davenport Creek. Continued crossing creeks for one mile. This creek must drain an immense tract of country eastward. Northward appears one mass of creeks. It is certainly a magnificent country, if there is permanent water. Distance, about 12½ miles.

March 29.—For 17½ miles, nearly due north, of good travelling country, and a little stony (sandstone); on it found a new fruit on a shrub, about 5 feet high, not unlike the bean-tree: the fruit-tree

of Cooper Creek also is here, and is a more handsome tree than between this and Cooper Creek: the bean-tree is also here. Within the last two miles the ground has been swampy and full of watercourses, with plenty of water, caused by the emptying of a large creek from the east, coming past south-west end of a large range east, and running north of this position; which creek I have named Brown's Creek. Distance, 17½ miles. (?)

March 30.—From a sandhill to-day an extensive view of the surrounding country. On the west side of the creek is a tier of ranges, running parallel with and close to it; nearest part not above 4 miles from this; hills on the right, at various distances, discernible all along the course to-day; the most prominent one seemingly well wooded, and terminating northward in a bluff, and small table-top. I have named the range Hamilton Range. Two table-topped hills are to the east and north of the bluff: N. 60° E. distant is a mass of apparently heavy ranges, running west of north, as do most of the ranges that at all approach the creek. The country here has been terribly torn by the flood and torrents of rain that must have fallen some short time back; in some places it has the appearance of being literally ploughed in stripes, but generally firm. To the east, between the hills, heavy creeks come out west and north, in all directions, overflowing the whole country: any one caught in the locality on such occasions as the late visit of the flood here would never more be heard of. Camped on one of the main channels of the main creek, about 80 to 100 yards wide, cut into a number of channels: abundance of water and feed. From this camp peculiar cliffy red table-topped hill, bears E. by N.; highest point of range, N.E. by N.; farthest part visible, N. 7° E.; is timbered on top; running N.W.; south end distant about 5 to 7 miles. Distance to-day, 16¾ miles.

March 31.—Passed table-top hill, about 3½ miles off, where the creek goes through the gorge between the table-tops; at which point it is fully ½ and nearly ¾ of a mile wide, and nearly one sheet of water and bogs, over table-top limestone and sandstone hill to flat on the other side, and camped at first good water we passed. Distance, 11⅛ miles. (?)

April 1.—Travelled zigzag through creeks from the eastward, and camped on large one from south of east, that we could not find a crossing at: to east and north no view, being perfectly shut out with timber. The country near the creek is a perfect bog; and even a man has great difficulty in getting out of some places that he is induced to try, thinking them crossable. The country is like a net, intersected as it is with creeks, magnificent pasture on the flats; a native fishing-weir is a little above this. Across the creek you can see the fish snapping at the flies in the holes: all the creeks, indeed, that I have crossed from the east have both fish and

mussels in them; but here the creeks are very formidable. Small crown top of the hill; another very fine one some little distance south of that; all those are on the western side of a large range, close by, running apparently N.E. and S.W. I sincerely wish I was safe on the western side of these main creeks, as I am thus driven contrary to my wish much east. Distance 20 miles; from point to point, about 10.

April 2.—Cross the creek with much difficulty, and camped. Then started to get a view of the country from a remarkable crown-topped conical hill, about 6 miles off, and had a most extensive view. A little to the north, and a little to the south, is one mass of table-topped hills, some apparently strongly timbered on top, with a perfect wall, from 10 to 30 feet perpendicular round summit of all, and some detached. North, in the far distance, is a mass of table-topped ranges, with apparently three gaps in them. Distance, $\frac{3}{4}$ of a mile.

April 3.—Found it impossible to cross the creek, and camped on a magnificent lagoon, about one mile long, and about 200 yards wide, a perfect flower-garden. Distance, $3\frac{1}{2}$ miles.

April 4.—At camp, Jeamie Lagoon: went and had a view from hills east; saw there kangaroo ranges far to the east, tier after tier; country timbered, &c.

April 5.—We get on without bread quite as well as I expected: the vegetables we use by boiling, which is a famous plan, both as a substitute for bread, and as keeping the party in good health. The natives on the main creek lower down south call it "cullie;" it is a sort of spinach, and does not grow more than a foot high, but spreads, perhaps, twice that much. Crossing creeks all day, with undulations covered with excellent feed between. Distance, $16\frac{1}{4}$ miles.

April 6.—Country becoming free from stones, and more open, except in the creeks. Ascended one of two circular table-topped hills, over camp. Found that a tier of ranges continues on my right, all along, varying from 5 to 8 miles distant; timbered with mulga: a mass of detached pyramids, cut, and conical coronet-topped hills are between my course and the main range; and I have the creek to the right. Not far off passed abundance of water on course over top of Euro Hill; creek bears suddenly off westward. It appears to pass through and receive large tributaries from the west and northward, between large leading ranges on the west, and through range with gap on the east side. This hill is a conical coronet-topped hill of burned sandstone, mixed with some quartz, and is 4 miles S.S.E. from camp. The country to N.E. and round by east to south for some miles is not all good: no ranges visible from north round to north-east. Between me and main range, to the east, are numerous red pyramid hills, of various sizes, and

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southward a number of detached table-topped hills, peaks, and mounds, all more or less timbered. I have called this hill Euro Hill.

April 7.—Exceedingly cold during the night. Started first over creeks and watercourses, many with water; next over burnt stony undulation, then got amongst a quantity of detached hills of lime and sandstone; the ground strewed with bronzed burnt small stones, and takes the print of an animal's foot readily, having a light soil under. Here fell in again with two creeks, which I suppose I must follow till I can cross. For 5 miles passing stony slopes towards the creek, and a vast abundance of vine with large yellow blossoms, the fruit being contained in a leafy pod; this fruit, when ripe, contains three or four black seeds as large as a good sized pea. I must try them cooked, as I find the emu-tracks very abundant where the vine is most plentiful. The tops of the low hills are of a whitish colour, and an immense quantity of gypsum is scattered over them as well as over the slopes. Then reached a little further on the main creek. This is a magnificent stream here. It is at least 250 yards wide, and from 40 to 50 feet down the banks to the water, lined with noble gums, box, bean, and other trees; how deep it is difficult to say. Lots of ducks of various kinds, cormorants, magpies, curellas, pigeons of different species, with the usual accompaniment of crows and hawks. Small hill visible in the distance to south of east; very extensive plain in that direction also, as well as east and north of east, with abundance of excellent pasture, and timbered low ridges, stony, but well grassed, with limestone, and the everlasting plum-pudding stone, with sandstone. Current in creek I should say not more than half a mile per hour. Distance, 17⅛ miles.

April 8. Camp 31.—Passed to-day plenty of timber for building purposes, on fine plains full of good feed. For the last 3 miles the ground we travelled over is nearly one mass of stones, limestone, and agate or flint, and very bad travelling; the creek runs strong—I have called it Müller's Creek. After getting to camp, got a horse and went out north of west to a ridge some short distance off, and saw to the westward a large tributary that I think will suit my course; at little over ¼ of a mile a very large creek comes in from north of north-east, and flows southward; it has ceased running, and has a broad stony bottom, but has splendid reaches of water: this I have called the Robinson. Considerably to east is a well-defined range in the distance, running north and south, with three detached mounds of hills, which I have called Mount Müller. Distance, 15½ miles.

April 9.—Crossed first the Robinson, then Mansergh Creek, after which found open country, with numerous traces of kangaroos being plentiful, and lots of emus on the plain. The last 3 miles was over a pipe-clay, slaty, spinifex, miserable country, with de-

tached conical, white, clay-slaty hills, top of the range all spinifex, although timbered with a white-barrelled gum of no great dimensions. Distance, 17½ miles.

April 10.—Passing up creek, and found hills receding and less abrupt-looking, but very wretched country. Distance, 12¼ miles.

April 11.—Decided this day to push on for Carpentaria. Splendid country. Crossed several creeks and camped, where a coronet-shaped hill, at or near the termination of a tier of ranges approaching the creek within 5 miles, bears N.N.E., a bluff termination of ranges from the creek on south-west side and on south-west of new day's course, bears w. 9½ N., about 8 to 10 miles. Distance, 18½ miles.

April 12.—Over immense open downs or plains, well grassed, with similar hills to what we have passed, but wanting the spinifex. Distance, 13¼ miles.

April 13. Camp 36.—Evenings, nights, and mornings beautifully cool, days quite hot enough. It is astonishing to see how fast the waters have dried up. At 14 miles to-day hills closed, those on the north-east side nearer than the south-west side ones. At 14½ miles tributary joins on opposite side from the hill close by. At 15¾ miles hill (burned sandstone) comes on to the creek; timber in creek nearly all white gum, North of Adelaide native orange, and a new fruit, something similar, that when ripe splits open down the sides whilst still green, and grows on a low prickly shrub, and when near other trees or shrubs entwines itself round them and grows to a good height. Camped across the creek. Kirby, by some unfortunate mistake on his part, did not arrive here to-night. Distance, 15 miles *direct*.

April 14. At camp.—Lots of kangaroo and emu here, but shy; cloudy and hot. Looks as if we were to have a shower.

April 15.—Started due north, and after going 6 miles, heavy tributary came in from E.S.E., apparently the principal channel. Compelled to camp at a water in the flat ¼ of a mile north of where I struck the creek. Distance to-day, 6½ miles.

April 16.—Started over the ranges, and at 9 miles, passing over myall flat, found red table-topped range close on right, and the last of the range. Found no water on the road nor in the creek, but fortunately some in a side creek, at which place I camped. Distance, 12½ miles.

April 17. Camp 39.—Started on bearing of 305° across an extensive myall, gum, and box flat, with innumerable tributaries into it in all directions. General drain to the south; water in many watercourses as we cross the flat, and must be an immense creek a little lower down, where they all unite. Kept the course for 11 miles, crossing a fine open creek running northward, which I think is the same that we crossed this morning flowing south.

Heavy ranges west. Apparent fall of water northward; about 4 miles south of this and immediately over the open undulation at the distance, the flow takes place south. Splendid country latterly, and camped at first creek we met with plenty of water. After getting into camp I rode out south, towards the water-shed, but found it further off than I anticipated. It must be from 10 to 15 miles, and most excellent country. The main range, west, from what I could see of it, is very stony; few trees, and a great abundance of kangaroo and other grasses. Emu and kangaroo in abundance. Range runs to east of north a little, and to south of west a little, and looks formidable. Distance travelled, 17½ miles.

April 18.—This morning, south wind was as cold or colder than I have felt it for twelve months—we were glad to get to the fire, besides fortifying ourselves with warmer clothing than usual. Stayed at camp. Went looking for a missing man (Kirby). Farthest north point visible of McKinlay's Range lies W.N.W. of camp, from 30 to 40 miles. No range visible between that and N. by E. ⅝ E. Nothing but heavily-timbered creeks, innumerable tributaries from both sides and south end. Exact course of main creek not positively discernible. Furthest southern point of McKinlay's Range, as visible from Observation Hill, S.S.W.

April 19.—Night very cold again. Party beginning to look rather short of provisions for making Carpentaria and possibly Port Denison. Killed bullock (leaving three). Started parties again to look for missing man, and just at dark up rode Middleton with the joyous intelligence that man and sheep were found. About 11 P.M. horsemen, Kirby, and sheep arrived safe, and I was truly grateful for the deliverance. The poor man says he never expected to see us again. He was completely worn out, not for want of food, but with a troubled mind and want of sleep. He had killed a sheep the second night after leaving last camp, and had with him a small portion for his use. How thankful he must have been to see Bell!

April 20. At camp.—Very cold. Kirby sleeping and recruiting himself. The meat drying; in consequence of the last detention, it has put us far back from what we otherwise would have been, and the course appears pretty open to us now.

April 21. At camp.—A splendid large creek flows west of south over the fall of water, and at 15 to 16 miles from this there is abundance of water in it, and must increase wonderfully as it goes southward and receives its various tributaries. I have called it the Hamilton. The one flowing south from our last camp (39) I have called the Warburton. The range between the two, going south, I have called Crozier's Range. From the division of waters, the ranges west of this, and the creek flowing northwards, a branch of which we are now on, I have called McKinlay Creek and

Ranges; I only hope the creek may hold a course west of north. The ranges on the east side of this creek, going northward, I have called Kirby's Ranges, to remind him of his narrow escape. Tributaries come into this creek south of this position, and west and east as far as I can discern from top of range, about 5 miles N.N.E. of this; there is abundance of water in many of the minor as well as the main creeks; mussels in all. Magnificent pasture all around, and lots of game, but wild.

April 22.—We had been here since the afternoon of 17th, and high time it is that we made some progress. The meat has dried after a fashion, but not sufficient for keeping any length of time without further exposure to sun and air, which we must do, as soon as we get to camp, for several days. I call this small creek Black-eyes Creek. Crossed what appears main channel of the creek coming from W.S.W., and various others coming in all directions. This is an immense creek, sandy and gravelly bed, with large and, to me, perfectly new trees, with short and broad dark-green leaf, and often clustering in fine saplings from the bottom, and growing to a good height; also some fine gums. Creek now on the right; country, after crossing the creek, is splendidly grassed, and firm sound ground between creek and range, which is some distance off; but we will be gradually approaching it on our present course. Crossed several sandy creeks from westward, and camped at the junction of a creek we crossed a short distance back with this; the creek immediately below this is about 300 yards wide, with excellent timber; there has been a little spinifex during to-day's travel, but the bulk of it has been well grassed, and fresh varieties of good sound country; a specimen of copper picked up in one of the creeks; a great abundance of quartz and mica strewed everywhere. I think I forgot to mention that, at the division of waters on the low bald undulations, limestone is strewed about in large and small circular pieces, from the size of a saucer to 3 and 4 feet in diameter, besides large blocks of it; the hills on the west are of a hard stone, between flint and sandstone, strewed about with quartz; the eastern one is of burned slate or clay, pretty much resembling many that we have already passed and what I was on, topped with spinifex, and the side with good grasses. Distance, 14½ miles.

April 23.—Started a N.N.W. course. A fresh broad bean from a fine runner found here, but rather green to obtain seed from; may get some ripe further north. A couple of small fish, about 2½ to 3 inches long, are in this water-hole, came up at the flood no doubt and left there. After going a few miles had to return to camp, owing to horses having strayed. So took a horse and went to the nearest hill, about 7 miles distant, to observe the course of the main creek, but the day proving warm and misty, I did not get so distinct a view as I anticipated; it was extensive enough, but

indistinct, although the elevation I was on must have been more than 3000 feet from level of the creek, and much higher ranges on to west of it. This hill is detached from the main mass of range, and distant from 4 to 5 miles. It, and the most of the intervening space between the camp and it, is literally one mass of quartz and quartz reefs, mica, &c., and on top of range a sort of flaggy slate, all apparently having undergone the action of fire. It bears from camp W. 53° N. 7 miles; a great deal of spinifex and abrupt creeks between camp and it; not a speck of gold visible.

April 24.—Camped early. My reason for making so short a stage was, that from the top of the hill I was on I fancied I could discern a continuation of dry-looking country beyond this creek. Very little spinifex on the way to-day; plenty of grass, and very good travelling; masses of quartz and mica all along our tracks; ridges low. For the last 150 miles at least there have been, on the slopes, and tops of all the ranges, decaying red anthills, not tenanted, and gradually decaying—many of them appearing like sharp spires, and washed in every shape by the rains and the weather. Distance, 7 miles.

April 25.—Passed over much quartz soil, with frequent deviations of route, necessitated by spurs coming down from westward. Camped on an immense creek, still flowing slowly through and over the sand in its bed; it is upwards of 300 yards wide, comes from the west and south, through the ranges, joins another about a mile north of this, and passes round a small stony hill on its right bank, then takes a northerly course, then, and lastly, as far as I could discern, a north-east course. Very heavy gum timber. The creek I have called the Marchant. The main creek is now a very considerable distance east. I hoped to have struck it before this, but the spurs from the main range keep it off. Passed, to-day, a vast number of smaller tributaries from west; immense reefs and masses of quartz, and small ranges composed of shining slabs of a grey, tough, and wavy stone, with masses of quartz. Distance, 24 miles.

April 26.—Crossed Marchant's Creek, and at 10 miles came to a very fine creek about 400 yards broad, in one of its branches from 60 to 80 yards; broad water completely fills the space as far as you can see southward and westward. I have called it the Williams. Immense holes in a light blue rock in the creek a few hundred yards north of this full of water, and apparently very deep, an abundance immediately beyond in the creek, which appears to flow northward. Lots of small fish in this creek, none yet seen longer than 3 inches; amongst them are a lot of fish about same size, or a little larger, with fine vertical black stripes commencing at the shoulder, and a black tip to lower part of tail—body generally lighter coloured than the other fish. Distance, 10¼ miles.

April 27.—Kept along Williams Creek; bad travelling, but latterly good country. At 13 miles came to and crossed a splendid creek, with abundance of water and lots of fish coming from the hills west, and flowing apparently east. This creek I have called the Elder. Distance, 13 miles.

April 28.—Last night we slept in the bed of the creek on the sand. There must have been a terrific flood here lately, such as this part of the world has not been visited with for many years; between 30 and 40 feet over our heads in the bed of this creek are now to be seen logs, grass, and all sorts of rubbish left by it; and immense trees torn up by their roots, and others broken off short at 20 to 30 feet from their roots—showing the violence of the current. No doubt there is plenty of permanent water in the range, further up in the last three creeks we have camped on. Passed over well-grassed country. After getting into camp, self and Middleton went on to the hill in front, and at 2¼ miles arrived at it. It is perfectly detached, and stands in the open plain—is very stony, or rather rocky. Open plains to the north and west, as far as you can discern; to the N.N.E. appears dark timber, which I hope to be the main creek, and appears to be bearing to north and west. A couple of isolated hills from 15 to 20 miles off, W. by s. ½ s. Distance, 25½ miles.

April 29.—Poole's Creek. This creek takes its rise from the westward, on the plains between this and the hills, which are now a considerable distance from us; and after passing this encampment bears to east round by north. Over open country; short stage; 150 miles by reckoning from Albert River. Distance, 11¼ miles.

April 30.—Black fellows burning grass to E.S.E. of us; the first bushfire we have seen. The grass passed over yesterday, although abundant, is rank, and not of that sweet description we have before seen, but no doubt excellent for cattle and horses. Just as the animals were being brought in for packing, Davis found, in a small shallow pool, nearly dry, numbers of small nice-looking fish of two sorts—longest not more than 3½ inches; one sort like the catfish of the Murray, the other spotted like a salmon. For 5 miles over timbered plains. At 6 miles came to and crossed a noble river, now a creek, as it is not running, but plenty of water; from 300 to 400 yards broad. At crossing the first cabbage-palm seen on its western bank between this and the last creek; on left of course is a splendid belt of white gums on the dry sound flat; this river, like the other creek, flows from south to west after crossing a northerly and easterly course. At 14½ miles came to a fine lagoon running easterly and westerly; good water in abundance: went round it and camped north-west side. No game of any kind seen to-day, except a turkey; a great quantity of vines on which grow

four or five black fruit, like peas, and extremely hard, from every flower; and on which the emu appears to feed much. There were also two other vines or runners, on which grows an oblong fruit about 1 to 1½ inch long, green like cucumber, but bitter; the other is a round fruit about the size of a walnut, darker in colour than the other, not so abundant, and which the emu seems to exist much on at present. Distance, 19½ miles.

May 1.—Very few natives of late. Fell in with fine grass and splendid open forest. Plenty of water visible. Shot a new bird—dark grey, large tail, something like a pheasant in its flight; it always starts from the ground, and settles awkwardly on the trees; its tail appearing a nuisance to it. The days now are very warm, and the nights very agreeable. Short as the time is since they have had the rain here it is astonishing how it has dried up in many places. Distance, 17¾ miles.

May 2.—At 7¾ miles came to and crossed a narrow deep creek, plenty water, about 50 yards wide, and have named it the Dugald, flowing N.N.E.; small ranges visible at crossing this creek; beyond a plain at south-west; nice open forest before crossing, and thence over creeks and through myall forests. At creek near camp there are a number of beautiful shady trees, leaves about 4 or 5 inches broad, and from 5 to 6 inches long; besides gums and various other trees. Spinifex on both sides of the creek down to its edge. A hill of no great height ahead. Saw plenty of turkey. Distance, 18 miles.

May 3.—Wind E.S.E., blew pretty strong towards morning. Along several rivers draining northward. The feed on the open ground is as dry as tinder, and not all of first class quality, the only green feed being about the creek and watercourses. A great abundance of those fine, shady, broad-leaved trees; they would be a great ornament in a park; it bears an abundance of seed, but not ripe at present, although I have taken some of it. Very sultry. Distance, 16 miles.

May 4.—Over creeks, good grassed table-land, and through scrub timber. No water all day. Distance, 27¾ miles.

May 5.—Heard a native wailing for some lost friend or relation during the night, but as yet have seen none of them, although they were burning on the left of our track yesterday, within 2 miles. The creek on which we camped comes from southward, and flows to west of north considerably; it is well defined with box timber, but not at all deep; it appears more like a side creek to a larger stream. There is here a considerable plain on both sides, and as yet no main creek visible, although I fancy there must be one, all the drainage yesterday being to left of our course, no doubt to meet some large creek to south and west. To-day's journey over much the same country. At the conclusion of to-day's stage, from

my calculations, it places me exactly on Gregory's track, 20 miles east of where he crossed the Leichhardt River. I hope it may be so, but I am hardly sanguine enough to expect it, taking everything into consideration—bad time-keeping watch, and nothing to go by but the guess of your horse's pace. Distance, 13½ miles.

May 6.—A vast number of gulahs, currillas, macaws, cockatoo parrots, hawks, and crows here. Started N.W. by W. over alternate plains, and through belts of small timber. At 7 miles passed swampy country, when some heavy belts of timber are to the right of course. A great number of birds; water I am sure could be had if required; over alternate plains and strips of forest as before. At 17¾ miles came to a native camp, near swamp (water). Saw two of them in the distance some few miles further, but they scampered off, and I did not go after them. Over similar country, latterly more open and even. At 22½ miles struck the Leichhardt River, at what appears an island. Plenty of deep water; banks too precipitous for the animals to water. Followed down it for 2½ miles, and came to a bend of the river. Good sound watering-place; shingly and sandy beach for about a mile. Camped near the upper end of it. It is a splendid river, and from bank to bank is from 150 to 180 yards where we are encamped. Distance, 25 miles.

May 7.—Camp 54. Started, keeping north, and passed lagoons with water; then through light forest. Seeing no prospect of water, returned to river, crossed it, and camped in the sandy bed; lots of stones for the last 2 miles, and stony about the river bank. Distance, 20 miles.

May 8.—I never saw such flights as to-day of Sturt's pigeons—at times completely darkening the ground over which they flew—a vast body of them seem to be wending their way to north-west from south-east, but great numbers are here on the plains notwithstanding; natives burning on the Leichhardt in all directions, and one or two fires towards the Albert. Camped. Took Middleton with me to ascertain what kind of country there is between camp and coast. At 6 miles N. 5° W. came to and crossed a creek, plenty of water flowing to N.N.E.; at 16½ miles struck a creek with heavy box and gum timber, and water where we struck it in small lagoons and side creeks. (Outcamp.) A great portion of the country we have come over from camp is inundated, and has now coarse grass and reeds. This creek here flows about north; south of this it comes more to the N.N.E. Distance, 9½ miles.

May 9.—Middleton and I still out; party in camp. More excursions east. About 6 miles due east crossed a creek upon a bed of lava, all rent, abundance of water; at 5½ miles further, struck the Leichhardt, its bed vast sheets of stones—rocks and small stones opposite side, lower down—the water in its bed is

upwards of 150 yards wide; again struck the river at a stony and rocky fall, and went westward half a mile to avoid the bend; struck river again at 3 miles on same course as above; then, at 4 miles, struck a lagoon to south; then, at 4½ miles, struck the river, water in its full width, now upwards of 250 yards, a splendid-looking place, and lined on its banks with fine timber of various kinds, with a variety of palms, &c.; then to the southward of south-west for between 6 and 8 miles, but the rugged banks were so intricate that it was impossible to calculate the distance correctly; in a great many places, half a mile from the river banks, the plains drop off precipitously from 3 to 10 feet, and slope off in undermined deep earthy creeks, finishing at last in deep reedy creeks close to the river; water in nearly all the side creeks, and compelled us to keep out, but sometimes we were caught in them, thinking the timber we were advancing to was a lagoon or belt of timber, and then we were compelled to go round it; then cross a very fine creek running into the river, the same, I believe, we crossed yesterday about 6 miles from camp on our outward course. From this to our camp I make out about 13 miles direct, on a bearing of about 200°: got to camp about 8 P.M. for the last 7 miles guided by a roman candle shot off at the camp. Fireworks are very useful in expeditions of this kind, as in many cases some of our party have been guided up to camp near midnight. *Distance (of round)*, 37 *miles.*

May 10.—Camp 56. Very cold during the night. At first over land subject to inundations and thinly timbered. Thence along lagoons, at one of which encamped. Distance, 14¼ miles.

May 11. Camp 57.—Could not have finer weather for travelling; abundance of feed, though on anything like high ground it has shed its seed and is now dry; plenty of good water as yet, and fair feed round it generally. Lagoons wooded round generally with rusty gum, box, and white gum; wind, E.S.E., and pleasant. Started to clear some broken slopes ahead, towards the river, on bearing of 345°. At 2 miles, over plains, came to and crossed a creek running into the river about a mile off; at 2¼ miles changed course to 9°, over open country—generally sloping to north-east from river, with plenty of water on each side; at 6¾ miles struck the river at the falls; plenty of guardfish, swordfish, and sharks, under the falls—which are about 50 to 60 feet high, with no current. Deep water above and below, and water oozing through the fissures of the rock, which appears a sort of burnt limestone and indifferent agate. Found an eatable fruit on a handsome tree of the palm kind. Distance, 11 miles.

[The expedition remained at Camp 58 till May 17th. Excursions; during which found a spot on the river, with immense sandpit opposite, evidently within reach of the sea; water in river brackish,

and numerous pelicans, &c. A (supposed) tidal rise of 4 feet observed. Camels then went astray, and prevented progress till above date.]

May 17.—Started on bearing of N. 44½° W., over good open country. At 2¾ miles, came to and crossed a creek coming up from S.S.W.; in that direction there are falls and sheets of rock quite across it and forming above and below them splendid reaches of deep water, with numberless ducks, &c., and black macaws and gillates in thousands. Plenty of water in our course beyond the creek for half to three-quarters of a mile; then over plains intersected with thin belts of small trees—the river not far off on our right. At 7¼ miles changed course to 12° more W., keeping a little farther from the river. At 15¼ miles got to camp. About 2 miles from this, and on our left as we came along, is a fine lagoon in the midst of timber. The tide it appears rises here from 6 to 10 feet. *Distance*, 15¾ *miles.*

May 18.—Through country full of lagoons. Where we camped we were perfectly surrounded by salt water, the river on one side and the mangrove creeks and salt flats on the other; country very very much burned by the natives—it was dry enough as it was without the additional use of fire. Lots of the water-lily in bloom on all the deep water-holes and lagoons, and a very handsome tree with dark green foliage and a beautiful yellow blossom, and completely loaded with a round fruit of the size of a crab-apple, now green, and containing a number of large-sized seeds. Distance, 28 miles.

May 19. Camp 60.—In camp near the river, where are caught occasionally by the party a few fish, amongst others a young shark which, however, was not eaten; started out this morning with the intention of going to the beach; but was quite unsuccessful, being hindered by deep and broad mangrove creeks and boggy flats over which our horses could not travel. There is a rise here in the river of six and two-thirds feet to-day, but yesterday it was a foot higher; killed our three remaining sheep, and on 21st decided to return by Queensland.

(*b*). McKinlay's *Journey from Carpentaria to Port Denison.*

May 21. Camp 60.—Commenced journey for Port Denison. (I forgot to mention before, that running parallel with the river, between this camp and our last are small ironstone and conglomerate ridges, with abundance of feed and good sound ground, wooded with the silver-leaf, dwarf gum-looking tree, and various others of no great growth but sightly, and in the ridges which are of no height to speak of, there are splendid freshwater lagoons and creeks.) Came to a lagoon about 2½ miles S.S.W. of our Camp 59,

on nearly our old tracks; splendid feed and water. Just as we had started in the morning, the natives made their appearance on the trees on the opposite side of the river, but did not attempt to cross. I suppose we shall see enough of them on our eastern route; this part of the country is well watered, and no end of feed; plenty of it higher than I am, and a considerable variety. (Distance not stated.)

May 22.—Returned to-day by my north-going track, the approaches to the river were so abrupt that I could not get a crossing place; some of the banks nearly precipitous and from 100 to 150 feet high, although I saw rocks right across the river, and could have gone over, but could not ascend the banks, so came to camp at a lagoon close to the creek, 3½ miles north 25½° west of camp of 11th May.

May 23.—At starting crossed creek, and at 3½ miles made the river, where it is joined by another of quite equal size apparently, but no crossing place; so had to go about 1 mile S.S.W. to the falls and crossed there with some difficulty, getting one of the camels and several of the horses down in the clefts of the rocks, and barking their knees a little; just after crossing and proceeding on bearing of E. 5½° S., a marked tree was observed, the first we had seen, and then close by two others, evidently by Mr. Landsborough, of whom had hitherto seen no traces. At scarcely 1 mile, on same bearing, we came to the falls of the other branch of the river, and crossed it much more easily than the other; it is about 400 to 500 yards broad, and all conglomerate stone and quite treeless, or nearly so, on its banks as far as the stones went; it then bore off to the south-east, or perhaps east of that; at 3 miles further, seeing ridges a-head on our course, we camped at a swamp; lots of geese and ibis. Distance, 9 miles.

May 24.—Geese and all game very difficult to be got at in this part of the country. Started on same bearing over swamp and lagoon, with occasional ironstone ridges and gum strips. Distance, 18½ miles.

May 25.—Nothing remarkable. Same country. Distance, 18 miles.

May 26.—Wind all night strong from S.E. to S.S.E., and very cold; no dew. The waters are drying up very fast; during the afternoon of yesterday the country looked well; nice open ranges on all sides with a large space of open country, well grassed in the centre. Started on same bearing and for an hour passed rather thickly wooded (low), small ironstone, pebbly country, well grassed, ridgy on both sides; then entered open plains; large creek a-head; first part of plain much subject to inundation. Hills cease about 4 miles; passed a couple of belts of timber. Camped on swamp. Distance, 17 miles.

May 27.—Cold keen wind from S.S.E. Camels very lame, caused by the burnt reeds running through the soles of their feet whilst near the coast; boots of leather have been made for the worst of them, but they seem to suffer much, and it pulls the flesh off them more than their work. Started on same bearing; country all burnt. This is a most deceitful part of the country, every five minutes you are in expectation of coming to water, but it was our fate to meet none but a muddy little drop—barely sufficient for our own use, and none for the animals. From about 3 P.M. till we camped, heavy belts of swampy box and large gums; many patches of reeds and coarse grass; water recently dried up; and belts of plain. Numerous birds seen—cockatoos, hawks, crows, gulahs, &c. (Distance not given.)

May 28.—Found almost within view, two splendid lagoons. Immediately returned to camp, and moved it at once to the nearest one; it bears from last night's camp nearly due south, a quarter of a mile or little over; the other lagoon is distant about 300 yards south-east of this. Great abundance of feed. Although we met with no water coming along last afternoon, I have no doubt but that there was plenty of it, as the natives were burning everywhere as we came along, particularly close on our right. It is still a splendid country for grass and timber. Distance, half a mile.

May 29 *to June* 2.—At camp.

[*Notes.*—If these lagoons are permanent (and no doubt there are many more) this is a splendid pastoral country—feed good enough for any stock, and timber to suit almost any purpose. There are here several fruit-bearing trees, but unfortunately the stone happens to be the largest portion of the fruit, and at present none of them are ripe. A vast quantity of large beans are here on a runner, the same that Dr. Leichhardt used when burnt for coffee, and rather seemed to like. None of our party seem to care trying it, although we have now nothing but meat and salt, and from 4 to 5 lbs. of flour, to make gruel in case of sickness. All have been, till within the last few days, in excellent health and appetite.

Had a visit from a number of natives, they do not appear so shy as usual; they do not circumcise, but have one or two teeth out in front of upper jaw. From what I could see, the young men are not allowed to talk, but merely make a hissing and twittering noise to make themselves understood, and point and motion with the hand, whilst the old men do the talking business. I could make but little out of them. I made them a few presents, with which they seemed much pleased; got a few words of their language, and with a promise to return to-morrow, they took their leave. They are not at all such a good sample as are

at the lakes north and east of Lake Hope. They say there is plenty of water a-head on the course I intend to take, but from want of knowledge of their language could glean nothing of the parties that came in search to the north coast; but that they have seen whites was quite evident from their knowledge of the use of the axe. They seemed much in dread of the camels, and expressed, by motions, a desire that they should be driven away.

Although the country still travelling eastward is rather too thickly wooded to be called open forest, it is still an excellent pastoral country, grasses sweet, plenty of water, the lagoons covered with water-lily, and soil sandy. There are many patches of burnt ground, some burnt earlier than the rest, with green grass 9 to 12 inches high.]

Stopped short on 2nd June for patients, who are very weak. Several palms seen through the forest, a few close by our camp of no great height; the feed in general is very dry, except in the neighbourhood of the creeks or lagoons. Distance, 12½ miles.

June 3.—Three creeks appear to rise here and join and become one, all from the southward of east to north of west. Started on bearing E. 5½° S. through open forest; country sand and scrub; camped in thick forest; no water. Distance, 25 miles.

June 4.—Went over poor ground, 8½ miles, and camped.

June 5. Camp 11.—Very scrubby for a few miles, and then more open forest. After three hours came to a large and broad creek, or mass of creeks, or river. Water not abundant on account of its being sandy in its bed. Distance, 10¾ miles. (I should imagine the river to be the Flinders, but if so, it must turn after it passes this very much to the west, to enter the sea near where it is laid down on the charts. Its bed, pretty well the whole way across, is wooded with the paper-like barked, narrow-leaf tree, and a few other shrubs. It appears as if there was not at all a heavy flood down it this season, as few or none of the trees are washed down.)

June 6.—Still on general course, bearing of E. 5½° S., over open-timbered, well-grassed land. Through same land, crossing rivers or creeks. All the creeks and the river have lots of cork-screw palms in and near them. Good forest all day, and abundance of grass. Distance, 13¼ miles.

June 7.—Over burnt-up ridges, and after 5 hours, drainage south and west chiefly, struck the River Flinders, or one of its largest branches. Crossed over and camped at a long sheet of water in its bed on south-eastern side. Distance on course, 16¾ miles.

June 8 *to* 11 at (*Return*) Camp 14.—A great abundance of the

McKenzie River bean here on the sandy parts of the watercourse. Here the watercourse is about 100 yards broad, in many places, bergues of sand separating it into different channels. Wild dogs abundant. Saw traces of kangaroo, emu, and wallaby on our way here yesterday. This sheet of water is from 250 to 300 yards long and 20 yards broad. On reconnoitring found that the watercourse comes from north, or a little west of north, from between the heavy-timbered ranges to north and west, and bald hills, or nearly so, to north and east, and probably winds round nearer its sources more to the east. A number of thinly-wooded hills, with small creeks running from them to west and south appear to run round south for some distance, perhaps 10 to 15 miles or more. Beyond the highest, in the distance, the natives are busy burning, and this leads me to suppose they are on the other or principal branch of the Flinders River. Abundance of water in the small creeks, as far east and south as I went to-day, and some lagoons in the flats. Our food now consists of about 230 lbs. of dry and salt beef, everything else in the shape of food gone; but I think we will have sufficient to carry us into the settled districts of Queensland, on the Burdekin River, where we shall be able to get a fresh supply. We have a little salt, and amongst the lot about half a pound of soap. The bed of this branch here is one mass of concrete and conglomerate, with small and large masses of ironstone, just as if it had lately escaped from a furnace, with pebbles and pieces of quartz, some sandstone, and sandstone in which is a mass of quartz. In many other places it is quite a bed of sand its full width, and in other places separated into different branches by bergues of alluvial deposit and sand, with trees of different kinds and shrubs and reeds upon them. There is a table-topped hill down on or near the north-west bank a few miles, lightly-wooded from N.N.E. to south-west, and apparently stony. Started E. 20° S. for first few miles through open forest, intersected with small creeks flowing to west and south, some containing water with lagoons on the flat occasionally, the drainage of the ranges to the eastward and north of our course. The spurs coming down close on our left, stony, but well grassed, and very lightly timbered, in fact, nearly bald ridges. Thence bore for south-west end of large range in the distance, that would otherwise come right across my original course. There is an immense large black circular range from E.S.E., round by south to W.N.W., with reaphook-like faces and scrubby tops, and a number of detached conical and coronet-shaped hills. Afterwards some difficulty in getting over and down a rocky range (granite principally). Struck a small creek, with sufficient water for our use, and good feed, and camped. Distance, 16 miles.

June 12.—Started E.S.E., and in 1½ hour, after scrambling and creeping over rocks and precipices, arrived at south-west end of

large hill. From top you command an extensive view; the whole country is black and dismal in appearance in every direction; a fine large range appears in the distance, ranging east to S.S.E., with well-defined gaps, &c., drainage all to the southward and westward. Now rounded this hill and went on a bearing of E. 10° S., just after beginning to descend traced a party of horses going northward under eastern side of large range, apparently when the ground was wet. Descended much more easily than we ascended; we got into a fine valley with good timber and plenty of grass, and in about 3 miles, came to a running creek from northward. Traces of a hurricane along the creek—tops of all the trees on the ground or suspended in the air by bits of bark; the timber on each bank does not appear, here at least, to have been touched. This large hill is composed of sandstone of various degrees of fineness, quartz, pebbles, &c., principally. At camp the creek or river is timbered across with the narrow-leafed papery-barked tree; some short distance up the stream from here this description of timber nearly gives place to gums. I have no doubt but that some day or other this place will be taken up as a station. Fish are in the deep holes, some that I saw about a couple of pounds' weight. I also saw some young guardfish, from 9 inches to 12 inches long, and many smaller. Lots of euro and kangaroo, but very shy. Distance, 6 miles.

June 13. Camp 16.—I take this to be the main branch of the Flinders; the hills on its right proper banks are very bold, and must be over 3000 feet high. If they are not before named, I have called them Gregory's Ranges, after Augustus Gregory. Started at 7·58 A.M., on bearing of E. 10° S., for the southern end of dark range in the distance; dip of sandstone (35°) to about north-east or a little more east. Passed first over good travelling country; then through broken ground and rocky ranges, and camped with much difficulty without passing the range. Distance, 18 miles.

June 14.—Craggy hills to commence the journey with this morning. This sandy watercourse flows to west and south, a mere narrow channel, but it was of much service to us; we would have fared badly for the poor animals had we not fallen in with it, insignificant as it appears. Our pack-bags got sadly torn yesterday with broken timber and rocks, all of which latter is sandstone. We passed much splendid splitting timber on our way yesterday, stringy-bark and other trees I don't know the names of, but useful timber. Crossed the ridge, scrub and very precipitous. Camped on creek running north-east. First pines seen to-day since crossing Lake Torrens. Distance, 19 miles.

June 15. Camp 18.—The creek receives 3 miles down a considerable tributary from the south-east—in fact, it is the main

channel, and the one we are in the tributary—then it flowed north 15° west to north, or nearly so, till 11·45, when the horses knocked up and had to camp. Distance between 5 and 6 miles.

June 15 *to* 20.—At Return Camp 19.

[*Notes.*—After getting to camp, ascended the hills on the right, or eastern side of the river, and never beheld such a fearfully grand country in my life—nothing but towers and pinnacles of sandstone conglomerate, fit for nothing but wallaby and euro. The apparent course of this river, from the greatest height I could get to, is about W.S.W., going, in the first place, after passing the camp, a little more north for 3 or 4 miles—it is a terrible country. I wish I had a little more food,—if I had, I would give the animals a week here, but I have barely sufficient for six days. Oaks have been seen to-day in the bed of the river, since the junction of the two channels. The river runs below the junction of the two branches for some distance, but here it is dry its full width, which is about 150 to 200 yards, and is very picturesque, with beautiful drooping gums, papery-bark trees, and various others, and the bold cliffs towering one above the other in awful grandeur. The country is literally teeming with euro and wallaby. Went up the rocks and precipices on the eastern side of the river, and found that a high range extends eastwards, running north-west and south-east, completely blocking us in from here. Rode down the river to see if there is any likelihood of our getting out east by a tributary that it receives about 1½ mile down, but found not. Shot a camel: very tasteless.]

June 19.—Having got rid of everything we can possibly spare, and that will now be of little use to us, and followed our tracks back to the junction of the two branches about 2½ miles, we took the left hand or south-east branch, and found it improve much more than I had anticipated; the rocky hills recede occasionally and leave a nice bank of grass—but most of it recently burned by the natives; and on our left, the rock appeared now to be chiefly slate, while on the right it still remained sandstone and quartz, the bed is broad and generally very open and sandy, upon which we have principally to travel; followed it for about 8 miles in about an E.S.E. course. For some distance (seen from a hill here) the river appears to receive from the east by south generally plenty of water at intervals, and generally at those places running; no doubt, all the way it runs either over or under the land. Where we are now encamped the river is upwards of 150 yards broad. Shot a new pigeon, will try to preserve the skin. Some figs were got by some of the party this morning before starting; I ate one of them apparently ripe, it was very insipid, the principal part of them were full of small flies. Distance travelled by bed of river, about 10½ miles.

June 20.—We have now on hand dried meat sufficient for about five and a half days, at the rate of one pound three ounces per day, without salt or anything else, which is not very heavy diet. I never saw a country where less game was to be obtained; what euro and wallaby are here are so very wild there is no getting near them. Just here the hills are not so high or so rough as some distance further down. Succeeded in finding a road on our left round the range that some barrier-ranges form from. Thence over much more open country, hilly, and thinly clad with small ironbark timber, and chiefly of slate formation and well grassed, but no water. Fortunately we got sufficient at the junction of a small side creek with the main watercourse to suit our immediate wants. It is perfectly surprising to see such a broad channel with such ranges close by and no water. A few kangaroo seen to-day. We managed occasionally during to-day to get upon the slopes from the hills on either side of the creek, which was much better travelling than in the soft sandy bed of the creek, which I have called Stuart's Creek, after Mr. McDouall Stuart. This part would make a good sound sheep country, if water at all times were obtainable. A number of oaks all along this branch, and more just here on our left side of the creek where the water is. Distance $9\frac{1}{2}$ miles.

June 21.—General course to-day about north-east, and fortunately got sufficient water in a barrier in the creek, evidently from recent rain—the bed of the creek otherwise perfectly dry. Ascended hill at camp, and found that the first leading main range bears east and about 40° north, which I intend making for. Distance 16 miles.

June 22.—The barrier here is composed of a yellow close-grained stone, impregnated with small specks of quartz, and the hills on either side, pieces of granite of the same kind are also strewed in the bed, brought down by the currents. A few oak trees immediately above this camp. Passed over hilly well-grassed ironbark granite country on a bearing of about due east, for the point of a range which I mean to ascend. Got to it at $11\frac{1}{2}$ miles; then $\frac{1}{4}$ of a mile along top of range, the ascent of which we found excessively difficult. Then we got a comparatively easy descent, and made for north end of a heavy range close by on a bearing of E. 50° N. At $\frac{3}{4}$ of a mile got to the end of it, over rough country intercepted with innumerable creeks, hills, rock, and timber; then bore E.S.E. for distant bluff of range along well-grassed but very hilly sound country for 2 miles. No appearance of water. Went down the spur of a small range we were on, and providentially at the bottom found in a little blind creek sufficient excellent water for ourselves and all the animals. I'm sure I don't know what the poor animals would have done had we not found them water;

and to our uneasiness two of the men, Maitland and Kirby, were seized with sickness on the road and useless to us. I found, after getting over the large range, that I could have got round it had I kept south, and by travelling a circuitous route; but from the western side of the range the way I came was the only way visible that was passable, and it was nearly as impassable as it was possible for it to be. From the top of it you command a very extensive view in all directions. To the south, in the distance, is a fine long leading range, apparently running from W.N.W. to E.S.E.; to the north and west high black ranges; to the east heavy dark ranges, but don't appear united. Drainage I can't make out. Distance, 16 miles (approximative).

June 23 *to* 28 at (Return) Camp 23.—This day had to kill a horse, to jerk. Ascended one of the ridges close by, but could not tell which way the principal drainage went—it is open forest land from north of east by south round to north of west for a great extent of miles, with heavy ranges beyond. The drainage appears to go from here, firstly to the south-east, receiving all the drainage of the large ranges apparently from E. 20° S. round to south, when it appears to turn suddenly round some prominent ranges after receiving drainage from the westward of this, and uniting in one large watercourse, and flowing behind a large leading range to south and east; probably the head of the River Clarke takes its rise here. The whole country to-day is, I may say, composed of granite, and sound country well grassed and watered. Distance, about 10¾ to 11 miles.

June 28.—Camp 24. The water, although running strong here, is of a milky appearance. Started due east over granite ridge, and crossed swamp and water-creek to north. At 2¼ miles boulders of lava on the eastern side; at 2¾ miles crossed large creek with plenty of water, which I have called Frank's Creek, after F. Marchant, Esq., of Arkuba; at 7¾ miles crossed a splendid creek with oaks, &c., quantity of swampy ground on either side, flowing same as last, which I have called the George, after George Marchant, Esq., of Wilpena. At 11 miles on top of small rocky range. Most extensive view a-head of level-looking country. At 12½ miles boggy swamp, went round the south end of it, drainage northward; at 15 miles crossed a good sized creek with sandy bed—some oaks—the water merely trickling through the sand, but sufficient for all our wants; good timber. Camped here. Distance 15¼ miles.

June 29.—On starting crossed large rocky creek from the south, with boulders of lava in its bed; a continuation of rough lava country for 3 miles; bad travelling. At 3¾ miles, crossed strong running river or creek, granite bed and fish; oaks on the banks; current to northward, thence over creeks to Lagoon. Saw three

emus to-day, and a few turkeys; kangaroos were also seen for the last two days. The latter part of to-day the feed has been very dry, but generally speaking it is an excellent country for any kind of stock; the only impediment to sheep is the very abrupt banks of the creeks for drays for the cartage of wool—but that would be got over with strict searching. Distance, 13¾ miles.

June 30.—A good deal of box and apple-tree about here; our chief timber of late has been ironbark and other very useful trees, with gums always about the creeks and swamps. Saw, yesterday, on the way, a few ofthat or namental fruit-tree of Cooper's Creek, which I have not seen for some time—but it was of small growth; the soil I suppose not being suitable. Gradually ascended the ridge through thick-timbered country; division of waters, about three quarters of a mile west of the mound or peak I was steering for at 4 miles. Abreast of peak at 4¾ miles; went to top of it; it was very steep and composed of very rough sandstone, granite, and decaying slaty stones. Had a pretty extensive view from it; but my view north of E. 27½ N. was intercepted by rough ranges. The drainage from this tier of ranges—eastern side—appears in the first instance to go to E.S.E., or even south of that; and afterwards, when all the watercourses unite in the flat some distance off, to go to north and east. Killed another horse. Latter part of to-day's journey very ridgy and rather rough, although well grassed; but indifferent travelling on account of the watercourses down the slopes being rather deep and steep on both sides. Distance, 9 miles.

July 1 *to* 4.—At Camp, "Jack's Swamp," after my unfortunate horse—poor old fellow, many a score miles he carried me. Plenty of splendid timber in this part of the country. A great number of large-sized kangaroos here, but rather shy. Athough there is abundance of grass of different kinds here, the camels eat but little of it, and do very badly—about the lakes north-east of Lake Torrens is the place for them, they eat nearly everything in the shape of grass and shrubs that grows there, but here it is quite different—but few acacias here, of which they are very fond. The hills hereabouts are composed of substrata of decomposing sandstone, with roots growing or dead in the fissures, the top rugged at and near the crest, with a description of stone-like decaying burnt brick, broken into fragments, although apparently united—very precipitous, and often overhanging near the tops of the ranges, with table-tops, generally scrubby, still with good timber even on top, and, where it is more open, fair grass in places, and spinifex in others, with heavy deep ravines down the slopes on all sides, and well grassed and timbered in the valleys. From top of range near our camp one has an extensive view; southward is a large valley, the receiver of all the drainage of the

hills east and west of it; south, the range is low, and over it can be discerned several conical wooded hills of greater and lesser sizes; beyond them, in the distance, can be seen two considerable ranges from north-north-east to south-south-west—at the latter point they suddenly terminate in nearly precipitous bluffs, showing that there must be a stream of some importance skirting that end of them, or some extensive valley—an easy way of arriving at them would be south from this camp, and over the low dividing ridge; the waters or creeks in this valley, after uniting into one or more large courses, flow to north and east, till they pass east of this, a few miles off; further view is intercepted by the ranges north and east of that.

July 4.—We start from this—"Jack's Swamp," Camp 27—with 46lbs. of dried horse-flesh, which I hope will be sufficient to carry us to stations on the Burdekin. We cannot, however, go direct from the hilliness of the country. All round this quarter quartz of colours is strewed over the face of the country in addition to the decomposing stones. Started firstly up the swamp side, northerly, a short distance, then easterly over a saddle in the range for the eastern slopes, towards the main drainage to the northwards. At half a mile on top of the saddle in the range, with drainage to the east. Then had to keep a little northerly of our course to avoid a rugged range on the right. At about eleven miles direct, struck the main drainage creek; but the actual distance travelled was considerably over that. A large mass of hard, dark-coloured, slaty-looking rock between this and the next creek, with a passage on each side. At 4 miles further, it receives a very deep but narrow creek from the west. Obliged to get into the main creek to pass it. Plenty of water and feed. Camped. A splendid creeper (scarlet) is here upon a number of the trees, climbing to their very top. The fruit is very showy, oblong, and quite the size of an orange, but tastes exceedingly nauseous, full of pulpy seeds—birds and opossums eat them. After getting to camp, went to top of a high range at three-quarter mile distant, east-south-east. From it I had an extensive view. At 40° easy to pass through range. From 82° to 90° very mountainous. 5° a very extensive valley, apparently inclining westwards. Blacks burning at 10° in the distance. North is a large irregular peak range; in the distance another, a little east of it. Distance, 16¼ miles.

July 5.—The main creek here is well lined with gums and well-grown oaks. The bank fringed with reeds. Lower down is about 50 yards wide, at the bottom level, and twice that width at top, and steep, but grassed all down the slopes. The forest over which we travelled yesterday was very much cut up with sudden and deep water-courses, making the travelling more difficult.

and in many places was stony (brown stone). To-day, crossed creek, and at about $2\frac{3}{4}$ miles, had to ascend range. At a short distance over the flat, after descending the range, which was of no great elevation, came on the creek again. As we struck the creek, noticed foot-prints of two horses in the bed of the creek, and shortly after more and more, which at first led us to suppose that the country was stocked thus far up; but after following along in the bed, we found the traces to be all about the same age, and that some time back. At length, on right side of creek, on the bank, at the distance on our last course of $3\frac{1}{4}$ miles, we saw the remains of an old camp, ridge-pole, and uprights, with the letter K cut on a couple of gum trees, which at once led us to believe it was some party or other marking the boundaries of their runs. Got up out of the creek at this place, and passed over rather open ground. The creek now out of sight, on the left. At $3\frac{1}{8}$th miles struck what I take to be the Burdekin, but no tracks of drays or stock of any kind up this length. It flows east at this place. I imagine we are a little above the junction of the Perry with this river. The bed of the Burdekin at this camp is about from 90 to 100 yards, and the strong running stream is confined between bergues on the north side, to a space of about 20 yards, and little better than knee deep. Only a few small fish visible. Magnificent gums on its banks, and plenty of excellent timber in every direction. This will be a most difficult part of the country for drays travelling on account of the many steep-sided creeks. At anything like a flood quite impracticable. Distance, $12\frac{1}{2}$ miles.

July 6.—Last evening the wind blew for a short time fresh from east by north, then lulled down; shortly after the sky became overcast, and during the night we had a light Scotch mist; this morning no wind, but sky overcast, with every appearance of rain. We tried some green hide that we were reserving for camel's boots, in our soup of this morning, and being pickled in salt when taken from the bullock, it imparted quite an agreeable flavour to our scanty meal, and we all enjoyed it much. First part of to-day's course through some exceedingly intricate country, hills close on the river, with deep ravines and most difficult travelling. In its present state no dray in the world could pass by it; the latter part was over rather better travelling (though we had to kill another horse that knocked up); the hills still close to the river, with deep ravines. Distance not given.

July 7. In Camp.—I went to top of one of the highest hills on right bank of river to-day, and had an extensive view. Between the hill I was on and that, there appears to be a good deal of level-looking country, and the hills on this side seem in a great measure to cease a short distance off. In every other direction it is rugged, with high broken hills, and an indifferent grass upon

them, with the exception of the very limited flats near the river, on which latter there is always abundance of good feed and splendid timber.

July 8.—Started late—the horses, even with the abundance of feed here, having strayed in all directions. Route lay through a very broken country all day—indifferent aspect till at the very end, where found flat country, well grassed, and camped. Distance, 15¼ miles.

July 9.—Heavy dew last night. To give the horses a chance of doing better, last night they were let go without hobbles, and this morning they have strayed to some distance, and again caused us to be late in starting. Started at 11·10 a.m. A number of natives must have been here on our arrival last afternoon, but must have decamped very hastily on hearing us, leaving all their spears, cooking and cooked vegetables, food, &c., &c.; the food they were cooking in their ovens, and what was lying cooked consisted of excellent roots of some kind or other, and a round fruit which they roast, and which is very good. We used all the roots, and found them most excellent, and left in exchange a tomahawk, which no doubt will suit their purpose as well, and suited us much better. I took the precaution of carrying all their spears up to our camp that, in case they might return to their camp in the night, they might not molest us; it saved us keeping watch, but we neither saw nor heard anything of them, except their dogs howling. Numbers of blue mountain parrots here, and a few ducks only. The river here is formidable, and the banks rather steep for easy access. On a south-south-easterly course, crossing creeks all day. Halted at a couple of lagoons. Distance, 9¼ miles.

July 10.—To-day crossed the Clarke River; no stream, but large sheet of water. Ice in the quart-pots this morning; the first we have seen during the whole of our wanderings up to this; but I once before saw where it had nipped off the young burnt feed before making the Burdekin. From south-west by west the large range on opposite side of the Burdekin runs about E.S.E. and W.N.W.; splendid bold mountains; crossed oak creek from south-west by south, at 9¾ miles; from junction of this creek westerly end of mountain range, table-topped, beyond the Burdekin bears N. 19° W.; at 11¼ miles crossed small steep creek. The river, now closely confined between steep hills, kept along the stony bottom of the range for some time, but, it being more rough a-head, was obliged to get into and follow the bed of the river for some distance. At 12¾ miles ascended the river-bank on same side; at 13¼ miles crossed very steep creek with water; and at 15 miles halted at a small rocky creek on the ranges, with water and feed sufficient for our use. Since ascending the banks out of the river our course

has been about N. 50° E., over a succession of stony ridges with some spinifex. Distance, 15 miles.

July 11. Camp 34.—Heavy dew last night. Started on same bearing of S.E., over ridges, till 3¼ miles, being the point where Dr. Leichhardt descended the steep mount close by. From this point the mount and peak on opposite side of the river, some distance off, bears as follows: south-west of table-top, W. 10° N., north-east peak, N. 28½° W. Got into the bed of the river, here comparatively easily, and followed it down its rocky and sandy bed for some distance, till obliged to turn out on the opposite side. A large island of rocks in the centre of the river, and deep water on both sides; the hills precipitous into the river. We got up the opposite side pretty easily, and followed it down, crossing a deep ravine and stony ridge, and recrossed at 2¾ miles, on a bearing north of east, and crossed the river back again—very steep on the side we crossed from, but good getting out—and came over ridgy, and latterly, basalt country, on bearing of about E.S.E., and camped on the opposite side of the river, at 3 miles on last bearing, where there was a suitable place in the bed of the river for killing one of our horses which was completely knocked up. This camp is about 2 miles up from where the river takes a south-east bend, and receives a river running into it at that bend. About ¼ mile from it, and nearer our camp, another large running creek joins the Burdekin. The larger one below, which is about one-third the width of the Burdekin, but down which quite as great a supply of water is running, I have taken the liberty of calling the Bowen, after his Excellency Sir G. Bowen, Governor of Queensland. The latter stream joins the Burdekin from north by east, but comes from distant mountainous ranges to the east of north-east. The smaller stream, the Campbell, joins the Burdekin from north by west, but comes from north, or a little east of that, from a mountainous country. As seen from a hill close by to west of the Campbell, the Burdekin there comes from a little north of west, and flows to S. 20° E., but not visible either way far. Distance, 9 miles.

July 12 *to* 14.—In camp. Caught some very nice fish, but not sufficient to be of any real service. The timber is not anything like as large or so good as it is further up the river. The bed of the river here is from 400 to 500 yards wide. We have shot a few crows, a cormorant, and a white eagle with blue back, to make a stew for breakfast; that, with a little salted hide, and about 2 lbs. dried meat, will make a very good meal, as matters stand at present. The remainder of the dried meat, and what we may shoot, I hope will last us as far as the Farming River, which is about 90 miles from this, which river I saw people start for from Sydney upwards of twelve months ago, and they must certainly be there

now: perhaps we may be fortunate enough to meet them this side of that. I have been quite disappointed at not finding the stations much higher up the river even than where I now am.

July 15.—Travelled all day over steep but fine grass, alternating with stony ridges, and creeks well watered. Made river at a point where it is forced by rocks on the opposite side to this, sweeping out a very large piece of the bank on this side, to the distance of several hundred yards, making the river-bed at this sweep quite 800 yards across, and well timbered round the sweep on this side: caught some excellent fish this afternoon; a black bream, the largest 5 inches deep, and 15 to 16 inches in length, excellent firm-eating fish, and a great help to our evening meal. Saw a platypus in the river this afternoon, first I have seen during the journey. Cormorants here are numerous. Distance, 15⅝ miles.

July 16.—Crossing creeks and passing through same country till we made the river, at 9¾ miles, where some drays and sheep had crossed some time since: followed the river down 1¼ mile S.S.W., and crossed a fine creek from west by north, and camped about ¾ of a mile up the creek: one branch of it comes from north-west by north; the other and best from west half south. Basalt ridge close to the river and south banks of the creek: a short distance down the river a cliffy precipitous tier of ranges comes right on to the river with dark scrubby-looking tops. On the right bank of the creek, with its junction with the river, is a mass of sandstone, with bullets of stones through it, and a yellow hard-looking clay, perfectly detached, the clay wall having a dip of about 45° to south-west: abundance of water up the left hand or southernmost creek. Distance travelled, 20 to 21 miles.

July 17. Camp 36.—Ice again this morning; very cold during the night. Started at 8 A.M.; 4¼ miles on bearing of south by east, along and over basalt country; crossed rocky oak creek at 3½ miles from west by south, swampy; continued this bearing for 6¾ to 7 miles, and changed course to 60° east of south: 1¾ mile, an immense swamp and lagoons, basalt ridges: close round crossed over these ridges; bore a little more to the east; and at 5¾ crossed a splendid stream, from south by west, with a number of ana branches. Basalt on the flats as well as the ridges: changed course to about east by south, horses tiring; halted at same strong-running stream at 4¾ miles: as it passes, it flows over falls in an E.S.E. course, along the foot of basalt ridges, and comes, as far as visible, from west and north: opposite side of the Burdekin River are bald-topped ridges, about 8 miles distant; basalt ridge on this side a considerable distance in that direction. Distance, 22 miles to-day. Large masses of granite are here in the bed of the rivers, and on the banks, although the ridges close by are composed of very cellular basalt and close-grained sandstone. From the top of

the heights, close to our camp, lots of tracks of sheep and cattle. No appearance of a station: fancy they have taken to the creeks. Distance, 22 miles.

July 18.—Browne River, on which we are, runs parallel to the Burdekin for some distance, and at only a very short distance between. Passed through indifferent land till we reached a scrub quite impassable, but full of game. Then crossed an oak creek, from south half-east, with water coming from west side of stony ridges; then about ¾ of a mile further to river, in a course E. 15° S., followed down the river for about 1¼ mile, and camped. Distance about 16¼ miles.

July 19.—Spelled. Very cold night, beautiful morning, and throughout the day the same weather.

July 20. Camp 38.—Proceed down the river; thence over nice undulating country, till we reached the river; then camped in bed of creek; lot of young oaks in bed of creek, just sprouting. The timber here is neither so abundant nor so good for building purposes as higher up the river; the latter is from 700 to 800 yards broad here, and a strong running stream on right side. Distance, 14½ miles.

July 21.—Crossed numerous sandy creeks, then reached a fine creek with excellent timber; afterwards a ridgy country. The country here has all been burned. Distance travelled, about 16¼ miles.

July 22. Camp 40.—Made Burdekin River at 8 miles. Highest point of Mount Razorback bears from that point a little east of E.N.E. Country very ridgy, and inclined to be slightly scrubby. Made the river again at 14 miles. Latter part very ridgy, and many precipitous creeks from the slopes, but otherwise well grassed. The greater part of the country travelled over to-day was of granite formation, with veins of quartz here and there, and lots of loose quartz scattered about. The river here comes from north for some distance; and after it has passed this, reaches a range about 1½ mile down the river, that appears to come right on it, whence it bears off suddenly to the north of east. It perfectly astonishes me not meeting any settlers ere this. Distance, about 22 miles.

July 23.—Wind cold, from north by west; no dew or frost.

July 24. Camp 41.—Crossed the river here, to save a considerable sweep, first to south, between 1½ to 2 miles, then to north of east. We have been compelled to kill a sixth horse for food. I trust it may be the last: went across the river yesterday, and saw the tracks of a few head of cattle, and, from what I could judge, not very old: hope to get to a station during the day. From our camp here a fine peak on left side of river, between main range and river, bears 48° east of north. At the bend on right bank of river, below our camp, quite 2 miles distant, the end of a large

hill comes on to the river, bearing S. 15° W.; a very rugged peak east of it, on same side, bears S. 3½ W. Only two pack-horses and one camel now. Over stony granite ridges: made the river at a southerly bend at 8 miles. A deep creek joins at this bend. Then bearing south-east by south for a peak a-head, at 2½ miles crossed large oak creek. The river immediately below this passes in an easterly direction, between two ranges that come right on to it. Distance not given.

July 25.—Started first over stony ridge, then good open forest, on a bearing of east by south; at 5 miles struck a river from N.N.W., which, immediately after crossing, went about east half-north. This river I have called the Forster, after A. W. Forster, Esq., of the Murray, New South Wales; followed it in its course for 2¾ miles; it then suddenly turns south-east; had to follow it ¼ of a mile. I then crossed over, and went on a bearing of east by north, through open country, till, at 1¾ mile, crossed a fine river, from north by west, which I have called the Scott. Went on this course about 2½ miles; ascended a peak here, and found Mount McConnell to bear S. 45° W. Another large conspicuous mount, from 7 to 8 miles off, bears N. 20° W. The camel about done up, and the country next to impassable: before getting to camp had to ascend a long stony and steep range; and no sooner up than down again in another place. Distance, 15¾ miles.

July 26. Camp 43.—Started, following the River Scott. On the left bank is a high precipitous mountain. Just as the river takes a south-east course, the Scott joins the Burdekin as it comes from S.S.W., flowing to N.N.E. In its whole width a perfect mass of slippery rocks and deep water, and where we struck it no apparent current; although, when it contracts more and runs through more narrow rocks, there is a strong and rapid stream. After getting about 1¼ miles along its bank in a N.N.W. direction, was compelled to halt; perfectly impracticable, and will be a most intricate crossing. This is a fearful country, and now that I see it, I am not the least surprised at not finding the Upper Burdekin peopled and stocked. A man has difficulty in getting along on foot, much more so with quadrupeds; as for vehicles of any kind, quite out of the question anywhere in this quarter. I am at present at a loss to conjecture how the dray, or drays and stock, found their way up the river so far, unless they went up west of Mount McConnell, or found some more practicable route lower down the Burdekin, which latter I very much doubt. We are encamped by a large gum tree, as the river takes an east by south course for some distance. The most rugged country a man would ever wish to behold; and to add to our difficulties in swimming across, numbers of huge alligators are here close to the camp. I ascended the hill, just

behind our camp, with much difficulty, to view the country ahead and about me. It was exceedingly stony and rocky. From it an extensive view, but much higher hills were in the distance in various directions. It is about ¾ of a mile distant from our camp, and bears from camp W. 30° S.; Mount McConnell bears W. 32° N. A conspicuous dark mount, from eight to ten miles off, bears N. 34½° E., round the north end of which the Burdekin passes. Distance 1¼ mile.

July 27.—No passage over the ridge or mountains practicable. A raft constructed of such materials as we can get here, floated but indifferently with our canteens, one leaky air-pillow, and our boiling vessels inverted, some of which were not air-tight, is ready for crossing to-morrow, the things and the men that swim but indifferently; many of the alligators close by in the same reach.

July 28.—After much swimming by Middleton and Hodgkinson, we managed to cross all the things and the camel. The horses we could not get to cross, so left them with the men to look after them, till to-morrow, when we shall try them again, and hope for better success. It is a most difficult, intricate, and dangerous place; if they all cross in safety, it is more than I expect.

July 29.—Camp 45. By much perseverance and difficulty got the horses and remainder of the men safe across; by 4 P.M., packed up and started down the river east by south very rough, walking nearly all the way for about one mile, at which place we take to the ranges. In the morning, on our way, at about ¾ of a mile, two considerable running creeks join the river; another running creek joins the river at camp.

July 30.—Camp 46 (and last). Started at 10·15, and at once tackled the range—up a steep hill, down again in a north-east by north direction, crossed a deep ravine, and ascended the first of a series of steep stony hills in a north-east by east course. From the summit, Mount McConnell bears W. 24° S. The conspicuous mount, round the north side of which the Burdekin passes, bears N. 23° E. Followed the river in that direction for about 5½ miles to a creek, the north and east drainage of the large range under the western side of which we were latterly travelling, and round the termination of them we camped at a running creek of excellent water, coming from east of south-east. We are here very reluctantly obliged to kill our good and faithful companion, the last remaining camel ("Siva"), that was with us in all our reconnoitring and other journeys; he was indeed a splendid animal, but now quite unfit to travel beyond this. I hope to get sufficient of his flesh to carry us into a station, or, if the country is at all passable, to Port Denison. We are encamped under some splendid shady large-leaved tree in the bed of the creek—leaves about 10

inches broad and 12 to 15 inches long. Some of the men found that the leaves, dry, were a good substitute for tobacco, and were soon puffing a cloud.

July 31.—Spelled here to-day to boil down camel. The remnants of a broken gourd we found here; it has been used as a vessel for carrying water; it was the size of a large cocoa-nut, with a neck about 6 inches long, through one side of which they had drilled a hole for a cord for slinging on their arms.

August 1.—In camp.

Saturday, Aug. 2.—Started at 8·53 A.M., course east by north, each man taking with him a certain weight of the boiled camel before him, as we are now reduced to 11 horses, one alone with pack-bags. After travelling for some 9 or 10 miles, we came upon the tracks of bullocks, quite fresh, and shortly after were gratified by the sight of the bullocks themselves, with two white men tailing them. We soon now were pitching into roast-beef and damper, and, don't let me forget, potatoes, salt, and mustard. The station belongs to Messrs. Harvey and Somers, and is situated on the River Bowen, a stream that flows northward into the Burdekin. Mr. Somers was not in on our arrival; he soon, however, came in, and we were most hospitably received by him. The flour, during the night and for some few days after, had the most astonishing effect on all of us, from the fact that our digestive organs could not digest the bread, being so accustomed to the easily-digested meat; we were most of us in great pain, and our legs and feet swelled very much.

3.—(*a*). *Extracts from Report of* W. LANDSBOROUGH, *in command of the Queensland Burke Relief Expedition, to* Captain NORMAN, *with reference to the Albert River.*

Sweer's Island, 8th October, 1861.

I HAVE the honour to inform you of the following particulars with regard to the Albert River:—On Tuesday morning (the 1st inst.), at 8 o'clock, we reached the mouth of the Albert River, at the sandy beach of Kangaroo Point. With the exception of Kangaroo Point, on the east bank, the river has an unbroken fringe of mangrove to a point 2 miles in a straight line from its mouth, and an unbroken fringe to a point 3 miles in a straight line from the mouth on the other side of the river. Above these points the lower part of the river has (where the edges have no mangrove)

fine, hard, sandy, sloping banks, which are well adapted for landing horses or goods. We found that the water was fresh when we reached Alligator Point, about 20 miles in a straight line from the mouth of the river; above this point the fringes of mangrove are scarce on the edges of the river, and back from the river there is rising ground, consisting of fine, well-grassed, and slightly timbered downs. At sunset we anchored at a point about 26 miles in a straight line from the mouth of the river, where a river from the southward, which Mr. Woods called the Barkly, joins the Albert River.

On going on shore on the western bank of the Albert River, I found within a hundred yards of it a water-hole at which it would be more convenient to water stock than the river, as the banks of the latter are at this point too steep. Above the junction of the Barkly, the Albert River is not navigable even for boats, owing to the number of snags. On the following morning we went up the Barkly on the barge for about 2 miles, to where it was too full of snags to proceed further up the river by water; we then took a walk over the "Plains of Promise," and crossed at a point about 3 miles from where we had left the barge. Where we crossed the Barkly it had a narrow muddy bed, the water in which was cool from its being shaded with pandanus, palms, and Leichhardt trees. A short distance lower we re-crossed by a tree, which the carpenter felled for that purpose, at a point where the deep water in it is caused in some measure by the rise of the tide; afterwards we followed down the river to the barge. At different places we marked the trees, but did not see any that had been marked previously, nor indeed any traces of any European parties. After walking over the "Plains of Promise," we went down the river, and anchored opposite the point where the cliffs are mentioned in the charts as 30 feet high. In the morning I went, with two native troopers, northwesterly over slightly timbered grassy plains, and reached in about a mile a water-hole, and in about another mile a narrow mere, which I called Woods Lake, extending northerly and southerly at least for a mile or so in an unbroken sheet of water. I went southward along the edge of Woods Lake to a clump of box and tea trees, and while I was marking a tree, Jackie shot (chiefly with one discharge of his gun) about half-a-dozen of whistling ducks and a large grey crane. The bank on which I marked the tree will, probably at no very distant time, be chosen as the site of a homestead for a sheep establishment, as it is surrounded by fine dry plains, which are covered with good grasses, among which I observed sufficient saline herbage to make me feel satisfied that they are well adapted for sheep-runs. As the wind was unfavourable during the afternoon, the crew had to row down the river. On the following morning we went ashore and got water, in a

water-hole near the bank, and also firewood off an old fallen tree, which, I think, is probably the real ebony. Late in the evening we reached a point on the eastern bank about 3 miles above Kangaroo Point. We went ashore, and in the course of a walk started on the wing two large bustards, and also, within shot of us, two or three wallabies.

In our way up and down the river the temperature ranged on the bar from 74° to 94°. The nights were agreeable, and we were fortunately not troubled with mosquitoes or sand-flies.

On the upper part of the river we saw altogether three crocodiles, but they were so shy that they remained in sight only a few seconds.

The slightly timbered downs and plains on the banks of the Albert River are, as I hoped they would be from their western position, of a similar character to good inland settled sheep country of New South Wales and Queensland; the trees that we saw are all small; but as sheep do best in Australia where the temperature is dry, the soil rich, and slightly timbered, and as this is the general description, I believe, of the country and climate of the Albert River, the sheep-farmer should be willing to put up with the inconvenience caused from the want of good timber for building purposes.

We saw large quantities of the small white cockatoos, and the rose-coloured ones, which are to be found only in the inland settled country of New South Wales and Queensland. The Albert River being navigable, will make the country on its banks very valuable, as I believe sheep will do well on it, more especially as they do well on inferior-looking country within the tropics to the north-west of Rockhampton.

Allow me to recommend for the depôt which you propose forming with the *Firefly* hulk * on the Albert River, some place as convenient as possible to Woods Lake, or the water-hole which I mentioned that I had found near the head of the navigation.

Albert River, Gulf of Carpentaria, 15th October, 1861.

Shortly after midnight of the 14th October, at the flood of the tide, which occurs here only once in twenty-four hours, we stood in for the mouth of the river, and, as the channel is of a winding character, and the *Firefly* hulk † almost unmanageable, we had to

* The *Firefly* had been wrecked on Sir Charles Hardy's Island (about 11° 50′ S. 143° 48′ E. ?) but having been got off, was brought round with great trouble, and made into a depôt.—[Ed.]

† The instructions were to take her to the head of navigation in the *Albert*, there to serve as a depôt for both Walker's and Landsborough's expeditions.—[Ed.]

take her right over the bar. On the 16th, from the time of the tide, the wind being unfavourable, we had reached no further than Norman's Group of Islands, which are about 10 miles in a straight line from the mouth of the river. At that place, from the small quantity of water on board, it became necessary to decide on what bank the horses should be landed; consequently three parties started in search of water—a boat and two land parties. The former, under the command of Mr. Frost, found a good pond of water near the lowest water we had found when we first explored the Albert River. In the same neighbourhood Mr. Campbell's party, who went up the west bank of the river, found another water-hole, which was distant from the ship, by the road they went, about 4 miles, and passable for the horses, although partly over mud flats, which during high tides are covered with water; and on that account I thought, having observed the country to be very low from the masthead, it would be impassable. I accompanied Mr. Bourne, Mr. Hennie the botanist, and two native police-troopers, to the eastward, in search of water. In that direction we went about 6 miles, which was further than was necessary, as we found water within that distance. The first 3 miles we went were chiefly over hard flats, which at high tides are covered with water; the next were over such good country that Mr. Bourne, although I had given him my account of the "Plains of Promise," said he did not expect to have seen such fine country on the Albert River. The character of the country is plains with the best grasses on them. Mr. Bourne and I agreed in thinking that the lowest of them (with the exception of there being on them no cotton and cabbage salt-bush) resembled in appearance, and from their having salty herbage in abundance, some parts of the Murrumbidgee Plains. The higher parts are more thickly grassed, and are slightly wooded with stunted timber, consisting of box, apple, white gum, cotton, and other trees. The cotton-trees I had never seen before; but Mr. Hennie told me they had been found by Dr. Müller, when in Mr. Gregory's party, in the expedition to Northern Australia. On this country we found abundance of water-holes, some of which were divided from each other by sandstone dykes, and contained some fresh and others brackish water. The north-easterly water-hole I named Müller Lake. It is a fine long sheet of water, which is brackish, but not to such an extent as to render it undrinkable.

On the 17th the ship was taken alongside of the western bank of the river, and a landing-stage having been made, twenty-three of the horses were walked on shore and driven up to Frost's Ponds.

On the 20th Messrs. Bourne, Moore, Frost, and two troopers, started up the river on a shooting and land excursion. I accompanied them to near Frost's Ponds, where the horses were running

and I was glad to find the latter were doing well, as I expected they would do, from the herbage of the plains in that neighbourhood being of the most fattening character. Late in the evening our sportsmen returned, and gave a most glowing description of about 8 miles of the plains they had crossed in going to and returning from some water-holes they had found, one of which was within ½ a mile of the river. As they made their excursion an exploring rather than a sporting expedition, they shot very little, although they saw several wallabies on the plains, and crowds of duck and other aquatic fowl at the water-holes they passed in the course of their walk.

From twenty-two observations, chiefly taken during the day, the temperature has ranged from 69° to 89°, and averaged a fraction over 80°. On the 29th we had a few drops of rain, which reminded us that we had hardly had any since we started from Brisbane, upwards of a couple of months ago.

My party went in search of the horses yesterday, and returned with them to-day to the place where the ship was aground, a point about 15 miles in a straight line from the mouth of the river. The horses were so fresh,* that to hobble them two of the quietest had to be caught, to round with them the others up. In the ten days that they had been ashore they had improved more in condition than any horses I have seen do in other parts of Australia in a similar period. To collect the horses, they had to go as far as 10 miles in a N.W. direction, to a salt-water creek, which, from Mr. Campbell's report, I believe is the River Nicholson. On the following day I accompanied Mr. Campbell and the troopers to the Nicholson River. The water in it we found not so brackish as that part of the Albert River where we left the ship. I was surprised to find it was not so broad as the river I have just mentioned. On the 30th we returned to the ship, after getting the troopers to collect the horses and shoot a quantity of ducks. By counting my steps I made the distance 7 miles to a bend of the Albert River near which Moore's Ponds are situated, and 2¾ miles further brought us to the point near which the ship had reached. It is a grassy plain between the two rivers, with a few stunted trees upon it; that nearest the Nicholson River is the poorest soil, and the grass at present upon it is very much parched up. A fine large enclosure for stock might be formed by running a fence across from the Albert to the Nicholson River.

* The freshness of the horses was surprising: because so soon after the hardships of their voyage, and the destruction of their forage on board the *Firefly* by sea water, they were chiefly sustained, from Hardy's Island till landing at Carpentaria, by grass, cut by our party: this was a task of some difficulty, as we had no implements for doing so excepting our knives.

(*b*). MR. LANDSBOROUGH's *First Journal of Exploration South-West from the 'Firefly' Hulk Depôt on the Albert River, in the direction of Central Mount Stuart.*

November 18.—Camp No. 2, situated near the junction of Beame's Brook. This day travelled over fine downs, chiefly wooded with acacia, and fine rich plains with a good variety of grass upon them, and a few saline herbs. Encamped on branch of the Nicholson River consisting of at least four channels, one full of fine clear running water, on the right bank of which we formed our camp. Distance 12 miles.

Nov. 19.—The channels are shaded by drooping tea-trees, swamp oaks, &c. As it was unnamed on the charts, I gave it the name of Gregory River, which we followed up the greater part of the day. The edges of the plain are of the richest soil, but only sufficiently timbered to afford fire-wood for a pastoral population. The grasses are of the best description. There is no appearance on the country we have crossed of its having had rain for a long time; but from the strong stream of water in the river, there must have been plenty of rain on the country higher up. Saw to-day, on several low places, salt-bush which the horses ate, of a kind I have often seen in the country west from Rockhampton, but never before so near to the coast. Distance, 21½ miles.

Nov. 20.—We followed up the Gregory River all day. Last night we had a potful of the young wood of the cabbage-palm, which tasted like asparagus. All the country we have seen to-day is of a similar character to that described yesterday. This afternoon we reached country on which rain had fallen recently, and it was, in consequence, covered with herbage so green that we did not think the horses on it would require water during the night. At this period of our journey the sextant was too much out of order for making sufficiently accurate observations of the stars. Distance 13 miles.

Nov. 21.—At 5 miles crossed to the left bank of the Gregory, where the river assumed a new character. It has a broad, hard bed with a short boggy edge at the western bank. The crossing of the horses over this place was more difficult than I expected, and had to be accomplished by strewing the ground with grass. The country seen this afternoon on this side, although fine fattening plains, is more thinly grassed, and not nearly so rich as that on the plains we saw lower down the river. On this side of the river we observed a white, stunted gum, with leaves like that of the apple-tree. I may mention a few common trees which I have observed to-day—first, on the edges of the river fine large tea-trees (melaleuca), with foliage like the drooping willow;

beautiful Leichhardt-trees, pandanus, and cabbage-palm trees: on the banks and scattered over the plain, stunted box, bauhinia, white cedar, and bloodwood; with the pandanus I got too intimately acquainted, for, while with merely a shirt upon me, leading a restive horse across the river, I fell back, and rolling, got its thorns into all parts of my body. Distance 9¼ miles.

Nov. 22.—On the left bank of the Gregory. This day hit on a creek which I have called the Macadam, which we followed up. With respect to the Macadam Creek, it is badly watered, and has a dry shallow aspect, and appears, from the scarcity of flood-marks, to have seldom a stream of water in it, and I am of opinion flows chiefly through flat country. This character of river has in the settled parts of Victoria, New South Wales, and Queensland, the best sheep country on its banks; but here, where all the country is dry enough for sheep, this will not be a recommendation. The water at our encampment was very bad, in a great measure from its being warm, shallow, and frequented by ducks and other birds. We had as many nice little figs as we liked to eat from a large shady clump of bushes near the camp. Distance 8 miles.

Nov. 23.—Passed during the morning a very fine water-hole, 300 yards long and 40 yards wide, very deep, with basaltic dykes at both ends like white limestone. In the afternoon we sighted the first hills we have seen since leaving the depôt, which appeared to be 20 or 30 miles distant. Struck the Gregory River again, where we camped. The river is here a ¼ of a mile wide, running strong in two channels. It is the finest and greenest looking inland river I have seen in Australia, and the country it runs through consists of rich-soiled plains, just sufficiently wooded for pastoral purposes. Since we left the depôt we have not seen any country on which sheep would not do well, excepting during the wettest and driest seasons. In country such as this, it is a singular fact that sheep do better, on the whole, in a wet season than on ridgy country. With one exception, where the soil was clayey, the country we have seen on this river is of the very richest description. At present, it is parched up, with the exception of a few patches of young grass near the river. In many places the old grass is 3 feet high. Notwithstanding the parched state of the grass, the horses have done well upon it, indeed they could not look better if they had been corn fed. Distance 12¾ miles.

Nov. 24.—Being Sunday, rested horses, and on computation found we had made 55 miles south and 25 miles west from Post Office Camp, near the junction of the Barkly with the Albert River, in latitude 18° 45′. Thermometer showed 90° at 7 A.M., and 103° at noon. We got a fine potful of cabbage-tree sprouts, which eat like asparagus.

Nov. 25.—Passed (supposed) mouth of Macadam Creek, and in the forenoon reached the hills, ascended one which was rocky and barren, and found a range from N. 67° E. to N. 32° W., none however very remarkable. Met native women and children. In the afternoon followed up the Gregory, the holes in which are at this point deep and long, while hills confine the river on both sides. The one on the right bank of the river, I have named Heales Ranges, and the one on the left Mount Macadam. Thence to a very poor camp—the worst the horses have had, as the grass was completely burned up. Distance 11¼ miles.

Nov. 26.—Camp No. 9, situated on the Gregory River. From this camp there are three hills on the left bank of the river, visible from the camp; ranges bearing from N. by E. to N. by W., I call the Hull Ranges; a hill W. ½ S., I name Mount Moore. To-day we went up the river 12½ miles. During that space it is confined more or less by ranges, which the river on either one side or the other washes the base of, when it is flooded. The river has the appearance of having a constant stream of water. A small log of wood on the edge of the water I observed was covered over with a stony substance, formed by sediment from the water. At one place in the river where we bathed, the current was so strong that it took our feet from under us in wading across. It is so deep that it is not fordable, except at the bars between the water-holes, where it runs swiftly. Its bed is full of large trees, among which I observed gum, Leichhardt, tea, and cabbage-palm trees. Along the edge of the water it has a fringe of pandanus. Among the trees in the second bed by the river there is coarse grass and other herbs. If we had seen the country under more favourable circumstances, a short time after rain had fallen, instead of now, when the grass is dry and withered, I should have called it most beautiful country; for, with the exception of a few barren ranges, the soil is very rich, and clothed with the best of grasses. The trees upon it are chiefly bauhinia, and stunted box and gum trees, with ironbark. Distance 12⅗ miles.

Nov. 27.—The river hereabouts is closely confined on both sides by stony ranges; a few drops of rain fell on us in the pass. The ranges on the left bank have on them dykes like artificial ones, which run at different places across the hills. Made for a small basaltic hill, opposite what appeared the junction of a larger river from the W.S.W. As the crossing-place was bad in this river the troopers and I crossed to look at the large watercourse; it was running, and so full of pandanus that we could not see it well. It might be only another channel of the Gregory River. It has the broadest bed, but has not so much running water in it. The basaltic hill rose too close to the river to let us pass, so we had

to go round it; and as soon as we had done so, we reached the junction of a creek from the north. The country about here consists of stony, barren hills and ridges, with the exception of a few spots, which have rich soil and excellent grass. There is slate in abundance, and the country is like that of some goldfields I have seen. The country we have seen to-day is fine fattening healthy sheep country; but it will not carry much stock, as the grass is thin. Distance, 7¼ miles.

Nov. 28.—[Mr. Allison and I made from time to time observations of the sun and stars; but as the sextant, which had been injured at the wreck of the brig, was out of order, we had no confidence in those observations, and have not preserved them.] From Camp Mount Kay, a hill confining the river closely on the left bank, about 1½ mile distant (looks about 3 miles), bore E. 29° S.; another hill about 2 miles distant, bore N. 28° E.; and another, 2 miles, bore N. 48° W.; also a hill forming the south end of the gorge of the river, about 1 mile distant up the river, W. 21° S. There is marjoram in abundance at this camp; but that is hardly worthy of remark, as it is very common all up the river, from the commencement of the high grounds. Detained this morning, as I had a shoe to put on one of the horses, and other things to do. To-day made separate excursion, over rising ground, of the richest soil, with hardly a tree upon it, to the foot of the ranges, at which place Mount Kay bore N. 56° E.; the ranges bearing N. 68° to 71° E., which I think are on the right bank of a watercourse we found soon afterwards, which I named the O'Shanassy River, just above its junction with the Gregory River. A table-hill, about a mile distant, E. 2° S. Thence to the top of a range which has a basaltic stony character N. 33° W. From it we observed that we were 327° from a distant, long-topped table-hill. Then searched for the river I expected to find coming from the southward, and found it by following down the river N.E. for 1½ mile below Mount Kay, where we marked a tree. We then followed the river up for ½ a mile, and observed that it was running. It does not join at the place which we the previous day thought was the junction of a river. Just above the confluence there is a scrub of large fig-trees, on which there were a great number of flying foxes. There is a hill on the right bank of the river, just above its junction with the Gregory, which I named Smith's Range. In returning, I observed at a point 1¾ mile S.S.W. from the camp, remarkable hills on both sides of the Gregory River, about ½ a mile above the junction with the O'Shanassy, which I have named Prior Ranges. Some distance up there are remarkable bluff hills on both sides of the river (the lower hills of the gorge). Made last night's camp at dark, the grass so parched up that the horses could not get any worth eating, and we had

nothing to eat ourselves. I was stung by a reptile, probably a scorpion. The pain it gave was sufficient to make me very uncomfortable during the night. *Distance* (*round*) *about* 19 *miles.*

Nov. 29.—At 5·40 A.M. started on the track of the main party, and at 2½ miles made a watercourse from the south, which I named Verdon Creek. Thence through rolling country of basalt formation. At the lower end of a gap in the basaltic wall, on the left side, there is a round-topped hill, just above the junction of Balfour Creek. At 9·24 reached No. 12 Camp. During the remainder of the day we all stayed in the encampment, except Mr. Campbell, whom I had requested to examine Balfour Creek. Mr. Campbell gave me afterwards the following report of his survey. "I proceeded to the Gregory, and though I endeavoured at several points to effect a crossing, we had to follow the stream about 4 miles before an eligible place could be found. Here the bottom is hard and stony, with about 3 feet of water running at a rapid rate. I then proceeded up the opposite bank, and crossed two dry watercourses, and at about 2½ miles came upon a branch going in a westerly direction. There was but little water in it so far as I went: and, as it was not running, I do not think water could be traced up any distance. I tried to cross the Gregory at the junction of this creek, but the banks were so boggy I had to return by the way I went." Distance (from Camp 11) 7½ miles.

Nov. 30.—Camp No. 12, situated on Haines' Creek. This day passed rapids, with fall of 6 feet. Then through scrub, where were kangaroos. In the afternoon the exploring party had to retrace their steps across a well-watered creek (to be called Murphy Creek), and camped on left bank of river. Distance about 9 miles.

December 1. At Camp 13.—At this camp we had a potful of cabbage-tree sprouts, and we ate a large quantity of it with lime-juice which made it resemble rhubarb in taste. It agreed well with us.

Dec. 2.—At Camp 13. Went to look for some running water; kept chiefly at some distance from the river, on the barren basaltic rocky ridges, and only crossed two dry watercourses. With some difficulty crossed at the top of the rapids. A few yards lower, the stream is 3 feet deep and several yards wide. Having now gone round the running water, as the country is very dry on both sides of the river, it follows that this fine stream proceeds from springs in the immediate neighbourhood. *Distance* (*round*), *about* 13½ *miles.*

Dec. 3.—Crossed to right bank of the Gregory. Crossed numerous creeks with the intention of following it on that side when practicable, and formed camp on the right bank, where we found water in the river from a recent thunder-storm. The bed

of the river we had found perfectly dry for some distance back. The river is badly watered along the course we have come. Below our last camp it has quite a different character. There are now only gum-trees in the bed of it, whereas lower down it was crowded with green trees, consisting chiefly of fig, Leichhardt, drooping tea-tree, cabbage-palm, pandanus, &c. All the country above Camp 11, on the banks of the river, is composed of barren, rocky, basaltic ridges, which are slightly timbered with stunted bloodwood-trees, and overrun with triodia, with the exception of narrow strips of flooded country on each side of the river, on the lowest parts of which there is coarse grass, and on the higher parts there are tufts of the best description of grasses. Distance 10½ miles.

Dec. 4.—Travelled for 3 hours, when there being no trace of water or suitable herbage, went in search but was unsuccessful. Returned after dark to Camp 14, and again we went in search of water, and in a distance of fully 5¼ miles to Camp 15, situated about 1 mile higher up the river than Camp 14. From our companions we learned that Jemmy had been up the river, and although he had been away all day, he had returned without finding any water. He observed, however, a smoke to the southward, where water very probably may be found, as these fires are generally kindled by the natives near water. Distance 1 mile.

Dec. 5 *to* 8. At Camp No. 15.—Mr. Campbell having gone to-day in search of water, made the following report:—"Left camp at 8·15 A.M. On reaching rise above camp, steered in a S.W. direction for 6 miles over a barren country intersected in many places by deep gullies or watercourses; one of these was followed to its junction with a very wide channel, larger, in my opinion, than the Gregory at the point where we left that stream. From its appearance, I imagine it has not been visited by a flood for a considerable period, as in many places it is overgrown with rank grass and young timber. We followed this channel up for some distance in the expectation of finding water in the deep holes along its bed, in one of which we discovered a native well, quite dry. Seeing after a time there was no prospect of procuring water by following this course, I left the channel and proceeded in a S. to a S.E. direction, and having neither water nor provisions with us, determined on returning, seeing no probability of obtaining water in the character of country through which we were travelling. Made the channel before mentioned, several miles to the north, which being followed down, led to the Gregory, about 4 miles above camp." *Distance travelled, about 30 miles.*

Dec. 6.—Searching for water all day. At 1·18 came upon a plain with table-land of the richest soil, and with grasses of the

most fattening nature, but which at this time are old and dry. This table-land I have named Barkly Plains. Then more plains, after crossing barren ridges with gullies running eastward. To the south-west not a tree was to be seen. Caught an emu and camped out. The grass in this neighbourhood is good, excepting, of course, on the ridges, which are barren, and covered with triodia. The creek has been recently flooded, and has remaining in it, I hope, sufficient water to last us until we find more permanent water to which we can proceed. I think that watercourses do exist, both to the right and left of the plain, from the general appearance of the country running parallel to the plains. *Distance about* 21 *miles.*

Dec. 7.—Returned to Camp 15.

Dec. 8.—Went on to camp on Pratt's Creek 9¼ miles beyond Barkly Table-land southwards. Distance 20 miles.

Dec. 9 *to* 15, at Camp No. 16.—Mr. Campbell has been for some days somewhat unwell. [During the week Mr. Landsborough and a native explored in various directions, while the camp on the 15th was shifted about 2½ miles to the s.s.w., being Camp No. 17. Numbers of dry creeks and stony ridges were traversed, with great sufferings for want of water. After finding a native water-hole, and being nearly lost in the plains around Clifton Creek, they came upon the O'Shanassy River, quite empty, and thence over some fair grass-land and barren ground to Camp 17, after passing a large river, to which the name of O'Shanassy was given (*v. post*).]

Dec. 16.—Started for the fine water-hole at the junction of a creek from the west, which I have named Campbell's Creek, with Clifton Creek. At Camp 18 we had a severe thunder-storm, which lasted for about 4 hours. At the two previous camps Mr. Allison made observations of the sun with the plains for a horizon, which were very satisfactory, as the latitude obtained was nearly the same as that of my dead reckoning, also nearly the same as the latitude made with the observations of the stars Aldebaran and Castor, with an artificial horizon at No. 16 Camp. Observations taken at Camp 16:—Aldebaran, 19° 14′ 21″; ditto Castor, 19° 24′ 30″; ditto Sun, 19° 24′ 30″; ditto dead reckoning, 19′ 24″. At Camp No. 17, about 2 miles southward from Camp 16:—Sun, 19° 26′ 47″. At Camp No. 20 (18th Dec.):—Sun, dead reckoning nearly the same, 19° 37′. Distance 5 miles.

Dec. 17.—Travelled all day in a s.w. by w. direction. Nothing to note. Distance 18½ miles.

Dec. 18.—Searching for water. Rich plains alternating with poor soil in ridges. Reached Allison's Creek, where are narrow channels and flats, timbered with gum-trees, and thickly covered with what is called on Darling Downs oaten grass. Meanwhile

the rest of the party were advancing, and ultimately camped in upper course of Darvall Creek, passed the preceding day. Distance, no data.

Dec. 19.—Camp 20, situated on Darvall Creek. Accompanied by Mr. Allison, I went out on the plain to a point about three-quarters of a mile south-west by south from camp, where Mr. Allison made the noon alt. of sun 85° 57′, which gave the latitude 19° 37′, which was nearly the same as my dead reckoning. Mr. Campbell returned to camp, having been out in search of water. He brought back a turkey which he had shot, and the good news that he had found water up the creek. At 6.30 P.M. we left No. 20 Camp; at 7.45 went W.S.W. up the creek to the water-hole which Mr. Campbell had found, near which, on the right bank, we formed our 21st camp. The banks of the creek at this camp descend in gentle slopes, and consequently have a continuation of rich soil from the plains; and, as the grass was not too old, it proved one of the best camps for horses we have hitherto had. Distance, 3 miles.

Dec. 20 *to* 23. At Camp 21.—Rich country round this part of Darvall Creek. In the afternoon, in searching for water, passed through what has received the name of Western Wood, chiefly scrub, full of salt-herbs, of which the horses were fond of eating as they went along. At this place we saw cockatoos and pigeons. From seeing them we searched for water, but did not find any; then across rich well-grassed plains to a belt of acacia, overlooking a plain to the westward, but beyond it a line of trees stretching north and south, which I have named Manning Plain. Found no water, and returned to camp. *Distance* (*round*), 16½ *miles.*

Dec. 21.—Having used the water up on the additional packhorse that we had brought on this occasion with us, Fisherman left us, taking back the packhorse to the camp. Started down the water-course which I have named Herbert Creek, in search of water, and after passing some small water-holes, and a strange rocky pit very deep, and crossing several creeks, reached a fine water-hole, which I named Mary Lake. This place seems to be a favourite resort for blacks; the banks are covered with mussels, and all the fire-wood burned. *Distance* (*round*), 15½ *miles.*

Dec. 22.—From previous night's camp on left bank of little dry creek we left for Camp 21, and, after losing the track, met one of the native troopers with a horse loaded with water. Reached camp about E.N.E. general direction of day's travel. *Distance, about* 24 *miles.*

Dec. 23.—Left on a south-western course, over rich well-grassed table-land plains, slightly timbered with bushes. We observed the small saline herbs which I have mentioned the horses to be so fond

of, also more of the Queensland salt-bush than we have seen previously. At 7 P.M. reached Mary Lake. Distance, 22¼ miles.

Dec. 24. Mary Lake.—Rested ourselves and horses.

Christmas Day. Mary Lake.—As ducks were abundant, and the grass good, this was a fine place for spending Christmas. In the afternoon Jemmy and I went down the river in a S.S.E. direction to a fine water-hole, which I have named Lake Frances; between Mary Lake and it we only found shallow pools of water from the last thunder-storm.

Dec. 26.—Fell in with some blacks to-day in latitude 20° 6′ S. In the afternoon crossed to where the left channel of the Herbert River was full of water and fine grass on its banks, on the right bank of which we formed our 23rd camp, at a place where Mr. Allison made an observation of the sun. The country is very level, and the watercourses are unconfined, and in times of floods the water overflows the low banks of the different channels. The blacks we saw to-day appear to be circumcised; three of them approached us, one of whom was an old black fellow we had seen yesterday. Their name for water, we thought from what they said, was "Oto." We presented them with a tin pot and two empty glass bottles, with which they were very much pleased. Distance, uncertain.

Dec. 27.—Crossed, near its junction, a western channel of the river. At this place there are flats covered with bushes like salt-bush, which the horses eat. These bushes I have observed on the western plains from Rockhampton, and on most of the low situations along our route on this expedition. Shortly afterwards we struck a river from the west, with a shallow and broad channel; the bed of the river at this place is very little below the level of the plain on each side of it; 3 miles farther came again upon the right bank of the river, where there are twelve box-trees growing in its bed. Before crossing to its left bank we got enough water to satisfy the horses; thence to a junction of a watercourse, with extensive flood-marks from the east. This river has a deeper channel, with trees on its banks, than the river we have been following down had. At 11·15 Mr. Allison and I went back to the westward, on the plains, and made latitude 20° 11′ 15″. At 6 P.M. had to retrace our steps 5 miles to where last water was seen. Distance (true), 15¼ miles.

Dec. 28.—Started back up the Herbert River, on our return journey to the depôt on Albert River, being unable to pursue our course to the westward from want of water. I sent Mr. Campbell on with the horses, while Mr. Allison and I went out on the plain to take an observation of the sun, which was not satisfactory, from the sun being overshadowed; we made the latitude 20° 12′ 35″.

Retracing route to the north-east all day, and ultimately camped half-a-mile from Camp 23 (Dec. 26). Here the grass was very abundant, and the holes full of water.

Dec. 29. Camp 25, situated on the Herbert River.—It was our intention to remain here for several days, as the grass was good and the horses required a rest; but I deemed it advisable to return at once up the river, because there were about 100 blacks in the neighbourhood of the camp, several of whom were so bold that I feared it might be necessary to shoot some of them, or give them possession of the ground. Two of them had passed our camp on the previous evening, and the troopers, with my consent, presented them with glass bottles, after receiving which they returned with a large mob, who remained till dark. Next morning they again made their appearance, and surrounded the camp. Mr. Campbell went up to one mob and tried to make them understand by signs that we had peaceable intentions towards them, but they, from his account, seemed fully bent on having us off the ground. When he was returning to the camp, Jemmy saw one of the blacks hold his boomerang as if he intended throwing it at Mr. Campbell, but he was probably advised by others not to do so. I am not surprised that they were vexed, as we would not allow them to come up to the camp, although they showed a bunch of hawk feathers and the two bottles we had given them, which they wanted us to believe were the signs of their good intention; and it is not to be wondered at, on the other hand, that we would not trust a mob of blacks, all warriors, heavily armed with spears, boomerangs, clubs, and little thorny sticks, to approach the camp. From my previous knowledge of the blacks, I fancied we would easily have driven them away on horseback, but this I did not think necessary. The mere fact of seeing the horses brought towards the camp made them retire to a more respectful distance from us.

At 10·5 A.M. left No. 25 Camp, and observed that we were not followed. Shortly after noon I and a trooper made for a tree on a rise, which Fisherman climbed, and from it observed plain country to the south and west, and wooded country to the east and north. Here we observed stunted box and bloodwood trees, and a variety of grasses, among which I observed barley, oats, kangaroo, and triodia, and immediately after fell in with the same blacks I had seen before. On this occasion they remained on the right, while we had dinner on the opposite side, during which time others to whom they *cooeyed* arrived at their camp, several of whom were loaded with game; these, heedless of their own camp or of us, bathed the first thing on their arrival. We shot ducks, and before leaving Kenellan water-hole presented to the blacks glass bottles, of which they were very proud. At Lake Frances

some of our party shot ducks. Camped at Mary Lake on our return to Flinders.

Dec. 30.—From this camp tried to find intermediate water between this and Camp 21 Outwards (*v.* Christmas Day).

Dec. 31.—Left for No. 21 Camp. Got an observation of the sun, which made our latitude 19° 47′ 35″. During this day's journey we have crossed no watercourse that I deemed worthy of notice, except Chester Creek. Camped at Camp 21 (*v.* Dec. 20).

January 1, 1862.—At 21 Outwards and 27 Inwards Camp we rested the horses, some of which were very sore-footed and tired. We also observed New Year's Day by dividing a bottle of rum, sundry pots of jam, and an extra allowance of meat amongst us. The water-hole was nearly dry.

Jan. 2.—No. 27 Camp to No. 18 Camp (*v.* Dec. 16).

Jan. 3.—Arranged for Fisherman to accompany me to the O'Shanassy River. We reached it in about 4½ miles, at a point a short distance below where we had been on it a few days ago. We found it had been flooded since we last visited it, and the holes along its bed were in consequence full of water. Judging from this that rain had fallen from the southward, I felt disposed to proceed in that direction; but considering the short time at my disposal, and the condition of the horses and their want of shoes, and knowing that the time was fast approaching when the *Victoria* would, from want of provisions, be obliged to leave the depôt at the Gulf of Carpentaria, I considered it expedient to continue my return journey.

Jan. 4.—Followed down the O'Shanassy River all day. It has a good stream of water. On the ridges I observed marjoram. They are nearly barren, and confine the river closely on both sides. During the afternoon we passed along a confined part of the river, where it has very high flood-marks.

Jan. 5.—Went along the edge of the river, which was very confined; so much so, that the horses at one place had to be led. Accompanied by Fisherman, I left the party, and went a few hundred yards ahead to a creek full of water, to widen with a pick a path up the creek. While I was doing so, Mr. Campbell reported that some of the horses had gone into the river of their own accord, and one of them was drowned, although Jemmy and he had swam to its assistance. On hearing of this misfortune, I came down to the river; got the two troopers to go and dive where the mare had disappeared, and they managed to get its saddle and pack on shore. Camped on the left bank of the O'Shanassy, where the river is apparently often badly watered. At this part of the river, even now, it is without a running stream, although recently flooded, and there is an absence of the pandanus, cabbage, and

tall drooping tea-trees, which crowded the bed of the river higher up, and are fine signs of the permanence of the water.

Jan. 6. Camp 30.—The river is still confined by barren and stony ranges, and has flood-marks from 30 to 40 feet high. Kangaroos are numerous on this part of the country. About noon passed junction of a river from south, which I, accompanied by Fisherman, crossed the river on a log to see. We found it rather smaller than the O'Shanassy, and I have named it Thornton River. We marked a tree, broad arrow before L, on the point between the two rivers.

Jan. 7.—The river is still confined by ranges, which sometimes terminate with cliffs. Camped on the left bank of the river and right bank of a gully, just above the junction of a small creek with the river. If this had been a good season a fine place for the horses would have been up this gully, as the soil is good, with right kind of grasses, and surrounded by basaltic cliffs.

Jan. 8.—In the course of to-day's march, I, accompanied by Fisherman, made a deviation from the river. While Campbell and party proceeded down the river, we went up a gully of the richest soil, but all the vegetation was withered from the dryness of the season. It, like the other gullies we saw afterwards, was surrounded by basaltic hills, which were again surrounded by basaltic columns composed of rocks of a more grotesque form than the columns which are common in this formation. The rocks were so rough that it was unpleasant to lean against them, and they were very severe on the feet of the horses. These columns, with the bottle-trees in the foreground, and the open flats and basaltic hills in the distance, had a picturesque appearance. We then made for the point formed by the junction of the Gregory with the O'Shanassy River, near which we found our party had formed their 33rd camp, on the right bank of the Gregory River.

Jan. 9.—Crossed the O'Shanassy River to follow down the Gregory. Land on to-day's route very much burnt. Camped where there was a rapid stream of water about 2 feet deep, after travelling 17¼ miles from the junction of the O'Shanassy with the Gregory. Direct distance somewhat less.

Jan. 10, 1862.—Mr. Allison, at 1 A.M., obtained an observation of Pollux, from an artificial horizon, which made its altitude 85° 36′. At first over poor stony ridges and light loamy flats, in which the Tombung fruit-trees were plentiful, also the following trees:—bauhinia, broad-leaved box, broad-leaved Moreton Bay ash, sweet-smelling jasmine, and bloodwood. The flats have got good grasses and marjoram. The river has here isolated hills on its banks, with ranges a mile or so back. Shortly after starting, came to a river about 150 yards wide, with high flood-marks, which I have named the Ligar; kept down it to where we crossed

it above an isolated hill, where it was dry; thence to bluff rocky hill, where the flood-marks are about 30 feet high—W.N.W. side. Held on down Heales Creek to the last hill coming down and the first going up the river (I have named it Mount Heales). Crossed the creek, and camped on the Gregory.

Jan. 11.—The course of the Gregory at this part is marked out by tall trees, with rich plains behind; then over rich country, now beautifully grassed, slightly timbered along the river and watercourses with bauhinia, broad-leaved stunted box, broad-leaved Moreton Bay ash, bloodwood, acacia (which gives a gum like gum Arabic, and is plentiful near the depôt), pomegranate, and other trees. At 11 stopped for Mr. Allison to get an observation of the sun, whose apparent altitude made our latitude 18° 34′ 30″. Our next courses were laid out to cut off the bends of the river, excepting towards the last, when we got too far away from it, and required to make for it again. The country we went over was, from the greenness and length of the grass, the finest-looking country we have seen on the expedition; but I think the Barkly Tableland is superior to it, from its having more salty herbage. The timber is of a similar description to that I have recently mentioned, except that the box was stunted (narrow-leaved instead of broad). Having reached water in an eastern channel of the river, we formed our 36th camp on the right bank of it.

Jan. 13.—Camp 36, situated on the right bank of the eastern channel of Beames Brook. [This day and the following were employed in searching for water, in which duty Mr. Landsborough underwent severe privation of solid food, but luckily found water.]

Jan. 15.—In the afternoon reached main channel of Beames Brook, which has a fine stream of water only a few feet below the level plains on each side of it. The water was muddy from the recent shower, and, in consequence, anything but pleasant. Mosquitos were very numerous, and allowed some of us but little sleep.

Jan. 16.—Over level rich country, slightly timbered with stunted box and a small tree like the Queensland sandal-wood, called by Mr. Walker the gutta-percha tree, and reached extensive plains, with the tall trees of the banks of a watercourse in sight to the eastward. Here Mr. Allison made an observation of the sun—alt. 86·45, lat. 18° 0′ 50″; then over fine slightly-timbered downs, but from the want of rain the grass on them was rather brown, to where we crossed to the right bank of a watercourse (Barkly River), with high flood-marks, but at present without water. We passed at this place a number of blacks perched in the trees. As we could not proceed in consequence of a heavy thunder-storm and the bogginess of the ground, we formed our 38th camp, on the left of the main watercourse (Barkly River).

Jan. 17.—The morning was wet, so I thought that after the rain of yesterday we could not proceed; but it cleared up, and we crossed Beames Brook two hours after starting. We found the crossing-place a bad one. When a few of the horses crossed, it became so bad that we had to unpack and unsaddle several before we could get them on to the firm ground on the left side of the brook. This is the first stream of water we have crossed since we left the O'Shanassy River near its junction with the Gregory. Beames Brook, therefore, must connect the Gregory with the Albert River, which accounts for the great size of the latter. We now reached Nicholson River, which has got a broad sandy bed, so full of tea-tree that we could not see its breadth at this place. From this point we made Beames Brook on our outward track, and after observing the tracks of an expedition party trending towards the depôt, arrived at our Outward No. 2 Camp (Post-office Lagoon), where we expected to have got letters, but in this were disappointed.

Jan. 19.—Passed over rich undulating well-grassed country, slightly timbered with flooded box, extending from the Albert River about a mile to the eastward of our track. Reached Albert River depôt at 11·20.

(*c*). *Journal.*—LANDSBOROUGH's *Expedition from Carpentaria to Victoria.*

The party consisted of Mr. W. Landsborough, leader; Mr. Bourne, second in command; Gleeson, Jemmy, Fisherman, Jackye, aboriginals.

The party left Carpentaria on the 8th of February, and arrived at Messrs. Williams's station, on the Warrego River, on the 21st of May—inclusive of both dates, 103 days. The total weight of provisions with which the party started was 1,279 lbs.

Feb. 8, 1862.—This was a busy day, as we were to abandon the depôt in the evening. By the assistance of Lieutenant Gascoyne and some of his men, with two boats, we pulled the horses across the river. In the evening the *Firefly* hulk was abandoned. Those of my party I could not take overland accompanied Lieutenant Gascoyne, Captain Norman having previously agreed to take them to their respective destinations, viz.:—my late assistant commander, H. N. Campbell, to Hobson's Bay, Victoria; Mr. Allison, and the aboriginal-trooper, Charlie, to Brisbane.

Feb. 9.—To-day we were busily employed preparing for our expedition.

Feb. 10.—5·10 P.M., we started and came 5¼ miles upon well-grassed plains, and encamped near a fine water-hole. The water

was slightly brackish, but not so much so as to render it undrinkable. The plains we crossed were slightly wooded. Distance, 5¼ miles.

Feb. 11.—Having to repair packs, &c., did not leave until 1·10 P.M. The three weeks' rest the horses had on the rich pasture near the depôt made them so fresh that they were excessively restive. When we had come a short distance over fine well-grassed plains, we reached a salt-water creek, which we followed up a short distance, then crossed it and encamped in haste (as we saw a heavy thunder shower was about to fall), in latitude 17° 53′. Distance, 4½ miles.

Feb. 12.—Camp 2, which we left this morning at 7.20, is situated about 7 miles S.E. from the Albert River Depôt. In our journey to-day, although we often got off the tracks of Walker's party, we did not altogether lose them. From last camp we came over well-grassed, lightly wooded plains for 5 miles, then over flat country for 4¾ miles. The land was covered with good grasses, and wooded with box and excoecaria. What I take to be excoecaria resembles the tree Mr. Walker describes as being probably the gutta percha. The box-trees are similar to those that grow near the Murrumbidgee River. In the middle of the day took an observation, which gave south latitude 17° 59′. Afterwards we came out of the wooded country to plains, and, after crossing a shallow watercourse, encamped. These plains had a higher elevation than any we had seen since leaving the depôt. The soil was rich, and luxuriantly covered with the best grasses, and slightly wooded with whitewood. The whitewood I take to be the tree Mr. Gregory calls the erythema. The last few miles were over plains subject to inundations. Distance, 16½ miles.

Feb. 13.—Passed over a rich, lightly-wooded plain about 8 miles, and struck the Leichhardt River at a part reached by the tide. This river seems to be fully larger than the Albert. The tracks of Walker's party were so indistinct on the rich plains, from so much rain having fallen, that I gave up hope of being able to follow them. Coursed the river down ¾ of a mile, and found a shallow, rocky ford, not available, as the rocks were too slippery, and the opposite bank too steep. From the ford we returned up the river, and encamped near some small water-holes. Distance, 8 miles.

Feb. 14.—In following the river up about 7¾ miles to a basaltic ford, where the water was fresh, we passed over rich, well-grassed country, consisting chiefly of plains, separated from each other by low wooded country. On the low land we observed salt-herbs, and pigweed, the proper name of which, I believe, is portulac. Crossed the ford and camped on the opposite side. The scenery here is picturesque; there is a fall of about 30 feet, with beautiful trees in

its neighbourhood. The channel of the river showed extensive old flood-marks, and had plenty of water in it, but I had to make a minute examination of it before I discovered the water was running. In a fine deep hole below the fall Mr. Bourne and I intended bathing, but had to go further, from hearing something like a large animal plunge into the water. Lat. 18° 10′ 30″. Distance, 7¾ miles.

Feb. 15.—Having crossed 1½ mile over a sandy flat, wooded with gum, fig, cotton, coral, white cedar, and other trees, we reached the flat rocky bed of a large watercourse, and crossed it 1¼ mile further; then 1¾ mile over a fine plain, with grass, pigweed, and salt-herbs. 1¾ mile more took us over a barren low ridge, with rusty gum, box, bloodwood, severn, and other trees, to a grassy watercourse, with fine little holes of water; being boggy, we were delayed in crossing. Thence over grassy flats and across another watercourse coming from the eastward. After trailing over poor ridges for 5 miles, we reached a fine, rich, flat valley, luxuriantly covered with barley and other grasses, when we stopped while some of our party tried, without success, to shoot an emeu. 4¼ mile beyond we reached a watercourse and encamped; the water flows from the N.E., and shows extensive flood-marks. The valley I named Neumayer. Direction to-day, E.S.E.; distance, 16 miles.

Feb. 16.—Sunday. Rested ourselves and horses.

Feb. 17.—Across low land, wooded chiefly with (what I take it to be) excoecaria; then over unwooded, gently-undulating ground, which extended up the valley to low bald hills. The land is well grassed. A site near those hills would answer well for a lambing-ground for a sheep establishment. Thence over high grassy lands, wooded with gum, broad-leaved box, whitewood, and other trees, to near the base of a hill, that was remarked from its only being wooded on its summit; after which, over undulating well-grassed ground, to a small watercourse from the west; then miles over flat, poor country, thickly wooded with bloodwood and other trees; the last 3½ miles over poor, low ridges, covered with triodia and other grasses, and wooded with bloodwood, tea, severn, and other trees, to a small watercourse, where we encamped. Direction to-day, E. by S. ½ S.; distance, 16 miles.

Feb. 18.—At 11·45 we had come 9½ miles over two kinds of country—the first and largest part consisting of poor low ridges, covered with inferior grasses, and wooded with bloodwood, tea, and other trees; the second part consisting of flat country, rich soil, well grassed, and wooded with bauhinia, and westernwood acacia. The acacia I have mentioned is called gidya in some parts of Australia. Then, after crossing a strip of unwooded country, we passed over poor low ridges covered with triodia,

and wooded chiefly with tea trees, for 5¾ miles, and encamped on a ravine. Direction travelled this day, E. by S. ½ S.; distance, 15¾ miles.

Feb. 19.—In the rocky basin of the ravine, at Camp 8, I think water will always be found. We left camp and came in an E. by S. ½ S. direction. The country for a short distance was confined, but on descending the valley it opened out into plains separated from each other by isolated hills of a conical form. The tops of the hills were covered by rocks which, from their appearance, were of a sandstone formation; the lower parts of the hills were well grassed, the plains of a rich soil, and covered with a luxuriant green herbage. At 9·30, having come over the plains on our old course for 5 miles from the isolated hills, we reached the Flinders River. The river, we were glad to find, had been recently flooded; in crossing we ascertained it had four channels, one of which was running. As this was the river on the banks of which Mr. Walker said he had found the track of Burke's party, I thought it would be a good plan to follow it up, and resolved to do so. From the opposite bank of the river we came S. 2¾ miles, which took us over country wooded with box and terminalis, to plains similar to those I have described on the left bank of the river, with this difference, that on this side there were more flats and pigweed, salt-herbs, and salt-bush. Lat. at noon, 18° 32′ 30″. Rest of the day through good grass country, and reached water. Distance to-day, 19¼ miles.

Feb. 20.—At Camp 9 one of the mares foaled. The plains in this neighbourhood are thinly grassed, which I think is caused by a recent dry season; early in the afternoon reached country that is more thickly grassed, and encamped. The foal was so active that it kept up with the horses on this day's journey. Distance, 11¼ miles.

Feb. 21.—Camp 10, situated on the right bank of Flinders River. After starting, steered E.S.E., a mile over rich ground, with box-trees and salt-bush, well-grassed land, thinly wooded with whitewood, pomegranate, bauhinia, and other small trees; thence S.E. 1½ mile, over ground so green with herbage that one of my companions said it resembled the banks of the Murrumbidgee in spring; took observation on an unwooded plain; lat. 18° 55′ 30″; thence S.S.E. over rich plains, covered in places with luxuriant young grass, having the appearance more of young barley than any other indigenous verdure that I have seen elsewhere. Distance, 12½ miles.

Feb. 22.—Travelled all day over thinly-wooded country and rich plain, occasionally covered with rich barley-grass. Observation at noon, 19° 6′ S. General direction, S.S.E.; distance, 17¼ miles.

Feb. 23.—This being Sunday, we rested ourselves and horses. In this neighbourhood Jackey and Fisherman caught five opossums.

Feb. 24.—During last night and this morning the weather was showery. In the morning the rain was accompanied by a strong east wind. Now that I am on the subject of the weather, I may mention that for some time past it was so cool that although we were in the sun the hottest part of the day, I did not find the heat oppressive. After passing some thinly-grassed but good soil, we came upon a watercourse with large quantities of mussel-shells on its banks, but with no water in its channel; thence over country, some of which was well grassed and very green, from the old grass having been burnt, crossing several watercourses. Having left the party to look at the river, in my absence a high hill was seen to the left of our course, which I named Fort Bowen. The vegetation in this neighbourhood seems nearly dead, excepting the salt-bush, though the soil is rich. Distance, 16 miles.

Feb. 25.—No. 13 Camp was situated on the right bank of the Flinders River, at a point about 4 miles distant from Fort Bowen, and N.W. and by W. from it. Looking from the camp, the hill had a long topped aspect, with rather an abrupt western termination. During night the weather was showery, and in the morning rain fell, accompanied by a strong north-east wind. Made for base of Fort Bowen, $4\frac{1}{2}$ miles. In coming that distance we crossed plains which had, near the river, more herbs than grass; and near the hill more grass than herbs. At the base we found springs surrounded by reeds and clumps of tea-trees. Accompanied by Jemmy, I ascended Fort Bowen, the rest of the party proceeding up the river. From the summit I observed two little hills in the distance, bearing 60° E. of S. From the density of the atmosphere, no other hills were visible. Plains surround Fort Bowen on all sides. Those on the west side of the Flinders River are more thickly wooded than those on the east side. Fort Bowen, I should say, is about 200 feet high. From its surface pudding-stone rocks crop out. Almost immediately after descending, we overtook the rest of the party, halting near water-holes in which there were ducks. Jackey and Fisherman had tried to kill some, but without success; upon which Mr. Bourne and Jackey went to shoot at a large flock of cockatoos, the rest of us proceeding on our journey, over rich plains, and encamped. Before we halted, Mr. Bourne and Jackey overtook us, loaded with cockatoos, of which they had shot as many as they wanted, as the flock did not fly away. Distance, $11\frac{1}{2}$ miles.

Feb. 26.—At Camp 14. Jemmy and Jackey went out early for the horses. Shortly after noon they returned, having only found a portion of them. They brought back two snakes, and ate

them for dinner. Jackey was bitten by one of the reptiles, but so slightly that he did not think anything of it. Snakes are rare in this part of the country. In my last expedition to the south-west I only remember having seen one. In the evening Fisherman brought in the remainder of the horses. The weather was showery, accompanied by northerly wind for the greater part of the day.

Feb. 27.—Having crossed a plain in sight of the trees on the banks of the river in an easterly course for $3\frac{3}{4}$ miles, sighted hills, named by me Mount Brown and Mount Little. Steered towards Mount Little for $4\frac{1}{2}$ miles, and reached a watercourse full of water from the east. Jemmy and I left the party, to ascend Mount Little, which is nearer to the river than Mount Brown. We reached Mount Little in about a mile, and rode to its rocky summit. Its elevation is about 50 feet. The rocks looked like granite, but on a closer inspection I found they were of a stratified formation. From the mount, nothing was observable except Fort Bowen, Mount Brown, a little rise, and extensive thinly-wooded plains. Fort Bowen bore 58° W. of N., the small rise S. and by E. I built here a small cairn, and scratched with a mussel-shell, which I picked up at a blacks' camp (having no knife), my initials and a broad arrow. If it always rained when the grass required moisture, this would be one of the best places, if not altogether the best, in Australia. Distance, $15\frac{1}{2}$ miles.

Feb. 28.—Near Camp 15, the water in the river is deep, with tea-trees growing near—a good sign that the water is permanent. Last night we had a sudden and heavy shower of rain. Passed at first over rich level ground, thinly wooded with box and (what I take to be) excoecaria, and green with the following herbage—roley-poley, pigweed, salt-bush, and grass to plains. Came $5\frac{3}{4}$ miles in the same direction across plains intersected from the east by shallow watercourses, outlets of the river during floods. At noon got an observation on a plane horizon of about a mile in length, giving lat. 19° 51′ 7″. Found the tracks of our party along an unwooded plain, with plenty of old grass on it, now green from the recent wet weather; and along a low sandy ridge, green with grass and brushwood. This land evidently retains the moisture better than that of the country down the river. Then $1\frac{3}{4}$ mile across a thickly-grassed plain, after which came $1\frac{1}{2}$ mile over level, well-grassed, and thinly-wooded land, with the exception of a sandhill wooded with bauhinia. In the afternoon passed for $1\frac{1}{2}$ mile over poor sandy land, badly grassed and thickly wooded, and then $2\frac{1}{2}$ miles over level country, covered with roley-poley, pigweed, salt-bush, and young grass, and wooded with box and westernwood acacia, to water, and encamped. Distance, $18\frac{1}{4}$ miles.

March 1.—Camp 16, situated on the right bank of the Flinders

River.—Travelled 5 miles E.S.E., on an average course along the right bank of the river, over rich level land covered with roley-poley, pigweed, grass, and salt-bush, and wooded with box, terminalis, and other trees. Observation at noon gave lat. 20° 3′ 30″. Came 1¾ mile over sandy level land, on which I observed, amongst other grasses, tufts of kangaroo-grass, and then 1½ mile over an unwooded plain and very rich soil, covered with roley-poley, pigweed, salt-bush, and luxuriant young grass, where I overtook the party, which now passed over an unwooded well-grassed plain, to a watercourse from the east, with long holes of water. Here a black was observed in the distance. As this was the first whom we had seen since leaving the depôt, and as I never had observed tracks on either this expedition or the one to the south-west, which a thunder-shower would not efface, I think there cannot be many blacks in the country near the Gulf of Carpentaria. Thence over rich low plains or slightly undulating land with abundance of grass, and slightly wooded with trees and bushes, to a watercourse from the east. On the country I have just mentioned grow bushes like the garden box, loaded with fruit pleasant to the taste. We broke branches and ate the berries as we rode along. Distance to-day, 20¼ miles.

March 2.—Camp 17, situated on the right bank of the Flinders River.—Tea-trees here fringe the channel, which looks permanently watered. Although this was Sunday, we came up the river, Mr. Bourne and Jackey having observed a strong body of blacks. We started over rich level land, grassed with herbage, and wooded with box and bauhinia, and encamped before noon, as it rained heavily. Distance, 5 miles.

March 3.—It rained so heavily that we remained here. The ground was so soft that the horses, much as they are inclined for rambling, did not go further away than ¼ of a mile.

March 4.—All day were passing over rich plains with luxuriant herbage, and crossed numerous shallow watercourses. Ground very soft. Meridian observation, 20° 19″. Jemmy, Jackey, and Fisherman were very successful in collecting food for their supper. On the plains they caught a great number of rats, and near here they caught five opossums. Distance, 18½ miles.

March 5.—Camp 19, on right bank of Flinders River.—Came over two kinds of well-grassed country, in an E. and N. direction, for 3 miles, the first part wooded with box and bauhinia, the second a plain between belts of timber. Afterwards E.S.E., across a plain, to some extent overrun with roley-poley to a deep stream flowing to the north. Here I swam across to the opposite bank to a plain, which appeared beautifully level, and made on it lat. 20° 23′. Thence up along the stream, in a south-east direction over

well-grassed land, wooded with box, to the outlet of a stream from the river, and encamped. Distance, 7¼ miles.

March 6.—Camp 20, situated on the left bank of a northern channel of the Flinders River.—The water having fallen greatly since yesterday, we carried the saddles and packs over, and then led the horses. As the northern bank was boggy, we had to apply the whip severely to some of the horses to get them to ascend it. Passed up along the left bank of a watercourse, with a thin margin of box-trees, across a plain, to the right bank of the river, where I made the lat. 20° 31′. Thence along a plain in a S.E. and by E. direction to a deeper and broader outlet from the river than the one we crossed in the morning, where we had to unsaddle and unpack. The horses were then driven into the stream, and swam across. Afterwards we pulled the saddles and packs across with a rope, and encamped. We adopted the following plan for taking them over the river. We attached the articles to the middle of a rope, and passed one end of it over the fork of a tree on the southern bank; one end of the rope being pulled with sufficient force to keep the goods clear of the water, and the other end pulled with much greater force, the goods were safely landed on the southern bank. This would have been accomplished easily if we had had a pulley, but as we had none, it took hard pulling to make the rope travel. The country we passed over has the same rich character as the land I described yesterday. Distance, 4¼ miles.

March 7.—Camp 21, situated on right bank of Flinders River.—Knowing that plains, with just a sufficiency of trees for firewood and shade, have proved better than any other for pastoral purposes, this country delighted me; but I must say it would please me more if there were a few high hills in the distance. I was, however, charmed with the landscape around the camp this morning. In the foreground I saw fine box, excoecaria, and other trees, festooned with beautiful cumbering creepers, and beyond them the horses feeding on a fine grassy plain, extending to the north and eastward, to apparently distant blue mountains. As the day advanced this picture unfortunately lost a portion of its beauty, by the disappearance of anything like mountains in the distant horizon. Went east for 10 miles along a plain behind the wooded country near the river, but further back it is either covered with roley-poley and pigweed, or with young grasses, which I am afraid are annuals. Yet, notwithstanding these drawbacks, it is a very fine country, and if care is taken by the future occupiers not to overstock it, sheep and cattle will do remarkably well upon it. When it is occupied, it should be improved by having seeds sown during the beginning of the wet season, to produce plants with deep roots,

which will take the place of the annuals. If this was done, and tanks and wells made in the back country, the land would probably carry at least twice the quantity of stock it could now; but to get improvements of that character made, a freehold tenure would probably be required. This extensive plain is in lat. 20° 37′ 30″. Started over well-grassed plains, and overtook the main party. At a shallow watercourse, surrounded by rushes and polygonum, where I got off my horse to get a drink, and carelessly let him out of my hands. In a second he scampered off to the other horses. Jackey, however, soon brought him back to me. Distance, 16¾ miles.

March 8.—Camp 22, situated on the right bank of the Flinders River.—The river presents here a fine sheet of water; the channel has the appearance of draining a large tract of country. Came E. and by S. along a plain behind the wooded country skirting the river, to an eastern channel of the river, and delayed five minutes to get water; after which, till near camping-ground, over gently undulating rich land, green with herbage and wooded with box. After crossing a small creek near its junction with the river, Jemmy and I left the party, and cantered for 2 miles in a north-east direction, over high undulating rich ground, with fine grass, to a point commanding an extensive view of the surrounding country. To the eastward I observed about 10 miles distant a line of wooded country, which probably fringes a stream flowing parallel to the Flinders River. Lat. at noon, 20° 48′. Thereabouts I observed the recent tracks of a steer or cow. Further on came to clay flats covered with grass and salt-herbs, and wooded with box. In a short distance we crossed two watercourses from the east, with good holes of water. Encamped near water and good grass. Distance, 16¾ miles.

March 9.—As this was Sunday, we rested ourselves and horses. I make it a rule to fare better on Sunday than on other days; so we had for breakfast, damper, meat, and pigweed; for lunch, pea-soup; and for dinner, cold rice and jam. The country in this neighbourhood I named Hervey Downs.

March 10.—At camp: party out, looking for the beast that I had seen traces of on Saturday.

March 11.—Party returned. From Mr. Bourne I got the following report of their expedition:—"After following the tracks of the beast for about 2 miles down the river, they found it had crossed, and travelled out on the plains in a south-easterly direction; followed tracks for 20 miles to where they turned nearly east. Up to this point they found water in several places, but in running the tracks for 15 or 20 miles further, found none, and very reluctantly turned back (feeling satisfied that the beast had got too much start of them); at 4 P.M. to water and encamped.

They had no rations, excepting an iguana and a few mussels." These downs consist of loose brown loam, thickly covered with ironstone pebbles, and would be very good country, if the roley-poley were not so prevalent.

March 12.—Camp 23, situated on the left bank of a shallow creek. Not far from camp crossed the river at a place where the water has a fall of several feet, over flags of sandstone; thence east, over rich well-wooded downs. By observation at noon, lat. 20° 41'. Started again over rich undulating land, to a watercourse. These downs are so sparse of trees that a small belt of brushwood on the top of an eminence was a remarkable feature. It is situated about a mile from the spot from which I made my observation; when we had come up the creek, on an average S.E. and by E. direction, for 5½ miles, we encamped. The country we have seen to-day has decidedly undulating features and a rich soil. Some of the flats were covered with roley-poley, but the rest of the country was grassed. Distance to-day, 18¾ miles.

March 13.—Camp 24, situated on the left bank of a broad shallow watercourse, named O'Connell Creek. When we had ridden up the creek about 4 miles we found the tracks of the beast that Mr. Bourne tracked south-easterly from the 23rd camp. After coming backwards and forwards for some time, we crossed O'Connell Creek, then came about 3½ miles to the left bank of the Flinders River, and abandoned the tracks of the beast, as they were going down the river. We followed up the river for about 4½ miles. The first part of that distance it was confined by stony ridges, wooded with acacias and other trees; in the second part were large box-flats, with unwooded rising ground behind. From our path along the rising ground we observed, in the distance, a number of blacks, near the river; and also observed, a-head of us, to the eastward, a long blue range, which I found afterwards confined the river on its right side. I named it Bramston Range. Afterwards we came over well-grassed country of a similar character to that I have described last for about 5¾ miles, and encamped. All the country we have seen to-day is well grassed, with the exception of a few plains, overrun with roley-poley. I may remark, also, that birds, chiefly consisting of pigeons, cockatoos, quail, and hawks, were seen in great abundance. Distance, 18½ miles.

March 14.—Camp 25, situated on the left bank of a western channel of the Flinders River. When we had come 7 miles, over rich well-grassed downs, we observed a great number of blacks on a level flat, which extended to the southward. Mr. Bourne and I approached them, and they all ran away, except some gins and children, who hid themselves in a water-hole. We remained near

them for a short time, and were joined by Jemmy and Jackey. The gins and children soon abandoned their hiding-place, and assembled on the bank, where they had their coolamans filled with rats. The old gins repeatedly offered the wives of the men who had run away to us. Amongst the females whom I observed, was a girl about ten years old, with a large bone stuck through the cartilage of her nose. The young gins had fine eyes, white teeth, and good expression. The children looked particularly lively and intelligent. Jemmy understood a few words of their language, but not sufficient to get information from them. Their word for water, 'cammo,' I caught while we were getting them to fill our pint pots with water. Lat. at noon 20° 29′ 16″. Thence over rich downs, very much overrun with roley-poley. As we had been getting too far away from the river, we made for it, and having reached water encamped. The country we passed over last, consists of well-grassed downs. In the water we got plenty of mussels, which made an agreeable addition to our rations. Distance, 17½ miles.

March 15—Camp 26, situated near a creek named by me Sloane Creek, 3 miles S.E. from Bramstone Range. In the morning, over rich, high, unwooded downs, for 5¾ miles, to a creek with a shallow broad channel. This stream evidently flows towards the river. I named it Walker Creek. After crossing Walker Creek we came over high downs for about 12 miles, and having found water encamped. Towards the river the country is wooded with a kind of myall, but not the drooping acacia. Amongst it the horses have gone to feed, in preference to the open country. The ground on this side of Walker Creek is composed of a reddish soil, with occasionally detached pieces of basalt. It is covered with the best grasses, the highest portions thinly wooded with small trees, amongst which I observed whitewood, myall, and Port Curtis sandalwood. From our path to-day we observed that the right side of the river was confined by wooded ranges, extending without prominent features from Bramston Range to table ranges near here. Distance, 17¾ miles.

March 16, at Camp 27.—To-day Fisherman and I left the party in camp, to ascend the lowest down of the three table ranges, on the right bank of the Flinders River. We reached the left bank of the river, which has a sandy level bed, and is about 80 yards wide. From the river we reached the base of the range in rather less than a mile. I expected to find it of a sandstone formation, with triodia on its surface; but on ascending the range I found that although it had a sandstone formation, it was covered with a dark perforated basalt, and at other places with rich soil and good grass. From the summit I observed that the river was joined at a short distance above this range by a tributary to the S.E., and that the following hills bore in the directions named:—A high distant

table range, which I have named after Frederick Walker, Esq., my brother explorer, 130°; a table range ¾ of a mile distant, 90°; a table range about 3 miles distant, 45°; three conical hills on a range about 7 miles distant, respectively, 44°, 43°, and 39°; a tent-topped hill, about 7 miles distant, 22½°; a hill with an irregular top, about 19 miles distant, 20°. Bramston Range, 245°; encampment, 195°. After descending the range, we proceeded to the junction of the creek, and marked trees on both sides of the river, just above its junction. Between the hill and the river we found marjoram, a plant that we have been searching for since we got our last supply at the Leichhardt River, to use as a substitute for tea; and also found—what interested us much more—the old tracks of an expedition party. The tracks were very indistinct; but as Fisherman succeeded in following them for a short distance to the north-west, I suppose that they were the tracks of Walker's party, when on their way from the Nogoa to the Albert River. (*Distance not stated—say 7 miles.*)

March 17.—Camp 27, situated on the left bank of a southern outlet from the Flinders River. Started late, along unwoooded, well-grassed land, at the back of country wooded with myall for 3½ miles, then over country more overrun with roley-poley, but otherwise of a similar character, for 2 miles to the termination of the myall. Here I observed that we were about 4½ miles west from the end of a range which I suppose confines the river on its right bank, and north-west from Frederick Walker's Table Mountain. After coming 4½ miles further, we reached a place where there was plenty of good water and grass, with a high bank, and encamped, as Gleeson was very unwell. The last distance was over unwooded downs, covered with barley and other grasses. Distance, 10 miles.

March 18.—Camp 28, situated near the left side of a watercourse of the Flinders River. At noon made the lat. 20°40′ 30″. Having ridden 7 miles, we reached Frederick Walker's Table Mountain, and ascended it. From its high summit I observed that, stretching across part of the horizon, there was nothing to be seen but plains. Along another part, on the south-eastern side, there was a succession of ranges, from which we bore in the following way:—From the end of the ranges in the distance, 151°; a distant range, 147°; a red rocky hill, about 7 miles distant, 140°; a table range, about 1½ mile distant, 103°; a high distant conical hill, the one that I probably saw from the table range, near 27 Camp, 5°; the table ranges, 310°. We were thirsty; and as we did not know how far our party would have to go to get water for the encampment, I spent as little time as possible in making observations. Having started after the main party, we overtook them just as it was getting dark. They had gone round the mountain,

and as they had not found water, they were proceeding to the north-east in search of it. Continuing the same course, we reached at 8 P.M. water, and encamped. The land we passed over to-day is good; the soil is a rich reddish loam. The country consists of downs, luxuriantly covered with good grasses, except at places which are overrun with roley-poley. These downs are thinly wooded in places with myall, whitewood, and Port Curtis sandalwood. Frederick Walker's Table Mountain is of a sandstone formation, and is covered at places with triodia. On the southern side of it there is a dry watercourse, which rises from the northward. At many places in coming up this river, we have observed a most interesting vine, which produced pods of beautiful silky cotton. As the pods were pleasant to eat, we were on the continual lookout for it. Distance, 18 miles (approximatively).

March 19.—Camp 23, situated on flat ground, on the left side of a small watercourse. Jemmy and Gleeson almost too unwell to travel. Proceeded a short distance, and encamped. The land we saw to-day was, on the whole, well-grassed; the flattest portions of it are wooded with myall, Port Curtis sandalwood, and western-wood acacia. The country, looking from the unwooded plains, is beautiful, and with luxuriant herbage; the surrounding isolated ranges lend an interest to the scenery. The river has here a sandy channel, about 120 paces wide, with a shallow stream meandering along its almost level surface. Distance, 5 miles.

March 20.—Camp 30, situated on the left bank of the Flinders River. Gleeson and Jemmy had recovered sufficiently to start on the journey. We started at 10·12. After crossing the river, we followed it up on its right bank in an easterly direction, and crossed it at the end of the range on the left bank. We then followed up a creek I named Jardine's Creek, in a N.E. and E. direction, and encamped. From camp, Fisherman and I went W.N.W. for 2½ miles, to the top of a range bearing as described from the following ranges:—A distant conical range (probably the one observed from near 27 Camp) 3° 48′; the end of Frederick Walker's Table Mountain, 245°; the other end, 238°; the place where Fisherman thought Jardine's Creek joined the river, 255°. The country we saw from our path along the right bank of the river was not, of course, extensive, but what we saw was flat, covered with long grass, and wooded with bloodwood and gum. These trees were the largest I have seen in this part of the country, and almost the only ones I have seen since leaving the depôt at all well adapted for building purposes. The country in the valley of Jardine's Creek is most beautiful. It is thickly grassed, and in some parts without trees; in others, thinly wooded, or wooded with clumps of trees. The hills on both sides of the valley are picturesque. Distance, 6½ miles.

March 21, at Camp 31.—Fisherman and I left camp this morning, and went S.E. for 14 miles. The first 4 miles took us over the range to the head of a creek; the next 5 miles down the creek; and the next 5 miles to the left of the creek. We then went S.W. to the creek, and selected a place for the next encampment. Then returning to depôt camp, we followed up the creek, and it took us in a N. ½ W. direction for 5 miles to our outward tracks. Then returning by our track to camp, we reached it by travelling for an hour after dark. In going and returning, we spent nearly twelve hours on horseback. At camp I was sorry to learn that Gleeson was still very unwell. The country on the other side of the range is nearly level; back from the creek it is chiefly overgrown with triodia, and wooded with ironbark. The ironbark-trees are the first I have seen on this expedition. Near the creek, and at some places for a mile back from it, the soil is rich, with luxuriant good grass, except at places where it is thickly wooded with westernwood acacia and Port Curtis sandalwood, where the herbage is not so rank, but the salt-bush amongst it is a good sign of its having the most fattening qualities. The ranges on the southern side of the valley are not so good as the ranges on the northern side; the former are more sandy, and are not so well covered with rich basaltic soil.—*Two rides of* 29 *miles and* 11 *miles; total,* 40.

March 22.—Camp 31, situated on the right bank of Jardine's Creek, at a point abont 5 miles above its junction with Flinders River. At 3.20 P.M., reached the place I had chosen yesterday for our encampment, and unsaddled. Distance to-day, 14 miles.

March 23.—As this was Sunday, we rested ourselves and horses. Gleeson and Jemmy still unwell.

March 24.—To-day we followed the creek, and encamped at a fine water-hole. All along the creek there are fine deep water-holes. The channel is a kind of sandstone formation, particularly good for retaining water. About eight miles above here, the creek is joined by another watercourse, about the same size, from the N.W. I have named it Coxon Creek. The country is not so level as it is higher up the creek. The soil is very good, with grass, salt-bush, and herbs. Sheep or cattle will do well on it, but it will not carry much stock to its acreage, as it is confined at many places by ridges with triodia, and only a small proportion of other grasses. Triodia is certainly better than nothing, as stock will eat it when it is young, and at other times will eat it rather than starve. The best part of the country is thickly wooded with acacia and other small trees. This would not be objectionable where blacks were quiet, and where it is not necessary at times to run sheep in large flocks; but in the first occupation of the country it will be so, as labour will probably be scarce. Distance, 15¾ miles.

March 25.—Came down the right bank of the creek and encamped. The creek has fine deep holes of water. The channel generally is confined by sandstone at places, by shelving rocks a few feet high, and inaccessible for horses. Here the channel is broad and sandy: about seven miles below the last camp it is joined by a smaller watercourse from the north-west, named by me Raff Creek. The country we saw from our path was mostly good. It consists of well-grassed, thinly-wooded flats, separated from each other by belts of Port Curtis sandalwood, bauhinia, and other small trees, and at other places by low ridges with triodia. The country in the immediate neighbourhood consists of low ridges of poor soil, with numerous rocky gullies. These ridges are chiefly wooded with ironbark and grassed with triodia. Distance, 15 miles.

March 26.—Travelled our usual pace till 1·45, when we encamped at a small creek from the north-east. We stopped here, as we found dray-tracks near the creek that I wanted to trace. Fisherman and I traced them a short distance to the north-east. The tracks were made probably by the parties who have occupied Bowen Downs. Bowen Downs is a fine tract of country that Mr. N. Buchanan and I discovered about two years ago. The country we passed over to-day is easily described. It is undulating, poor land, of a sandstone formation, grassed with triodia, and wooded with ironbark and bloodwood. Having left the creek on which we encamped last night, our course to-day took us back on to high ground, from which we had to descend. Distance, 14½ miles.

March 27.—Camp 35, situated on the right bank of a small well-watered creek. In a ride down the creek this morning I saw the recent tracks of a cow or steer (probably made by the beast that had been on the Flinders River). Started from camp at 1·45 P.M., and crossed a creek flowing to the northward. On both sides of the creek there are stony ranges, grassed with triodia, and wooded with ironbark. After leaving the creek we crossed the ridges, and came on land with a good deal of rich soil and wooded with belts of myall, Port Curtis sandalwood, and westernwood acacia. About these scrubs the grass is very good, and there is a luxuriant undergrowth of salt-bush and salt-herbs. Sighted to the south-west a small isolated hill, which Mr. Bourne and I ascended. It is surrounded by rich, well-grassed, high downs, wooded at places with small belts of myall. The shape of this hill is like an artificial mound, with the ruins of a tower on its summit, Distance, 10 miles.

March 28.—We encamped to-day at foot of Tower-hill. On its summit I found a small tree that I remembered marking when on my first expedition to this part of the country. Almost half the way to Tower-hill was wooded with myall and westernwood acacia. In the middle of that wooded country, we crossed a range, and

observed unwooded downs to the right of our path. The remainder of the way was rich, undulating ground, slightly wooded with trees and grassed with best grasses. To the left of our course there was low ground, wooded at places with box, and at other places with westernwood acacia. In a water-hole near camp, Mr. Bourne and I while bathing found mussels in abundance; but as our caterers, of whom Mr. Bourne was the chief, had shot two turkeys, we did not gather any mussels. Distance, 16½ miles.

March 29.—From last camp we reached Landsborough's Creek to-day. I expected to-day to have reached a station that Mr. Buchanan, when I left Brisbane, told me he intended forming on this creek. I told my party to expect that we would here get fresh provisions. When we had travelled upwards of 10 miles from last camp, and in that distance only saw the appearance of a single horse-track, I came to the conclusion that Mr. Buchanan had taken no stock up the creek, and changed our course, so as to strike it lower down. Further on, we all felt confident we were on stocked country; but this impression was soon changed by Fisherman telling us that he believed the grass had been eaten off by grasshoppers. The country we crossed to-day is a rich soil, and is wooded along the watercourses with box, and at other places with a few bushes. Near the creek the land is flat, and badly grassed, but back from the creek the land is undulating and well-grassed. From our path we saw, on both sides of us, table ranges, which gave a charm to the landscape. Distance, 23½ miles.

March 30.—This being Sunday, we rested.

March 31—Camp 38, situated on the left side of Landsborough's Creek, about 2 miles north of a table-range on the opposite bank. We crossed Cornish Creek a short distance above its junction with Landsborough's Creek. It had been recently flooded; and although the ford was a good one, the stream was still about 3 feet deep. Below the junction of this creek the watercourse is called Landsborough's River. (Lower down we ascertained it was called the Thomson River.) On the left bank of Cornish Creek there are wooded ranges extending for several miles down the river. After leaving these ridges, our path down the left bank of the river went over rich undulating ground, with good grass, and a few belts of box-trees. On the opposite side of the river there is a considerable extent of wooded country. An observation at 2 P.M. this day gave lat. 22° 27′ 39″ S. Distance, 16 miles.

April 1.—When we had come down along the left bank of the river about 8 miles, Jemmy and I left our party, and went back to the unwooded downs. These downs extend as far as the eye can reach to the eastward. Before we had gone far we found the recent tracks of an exploring party, and, instead of rejoining our party, we followed the tracks to see where they led, which appeared

to be in the direction of some untimbered hills on the left bank of the Aramak Creek. After leaving the tracks we made for the river, and reached it at a point a short distance above an old camp of mine, where there is a tree marked

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At the river we found we had overshot our party, so we had to follow the river up to find their encampment. Our path to-day went 15 miles over unwooded, undulating, rich ground, bearing abundance of grass; then 11½ miles over a country with higher undulations, and good grass, with myall, westernwood acacia, and Port Curtis sandalwood. Distance made by Expedition not stated —probably a little over 8 miles. (*Distance travelled by Jemmy and myself to-day*, 26½ *miles.*)

April 2.—Travelled down the river till 6 in the evening, journeying later than usual to get out of the neighbourhood of some blacks that we passed about 7 miles back from here. At a place about 14½ miles back I halted with Jackey, and made an observation of the sun, lat. 22° 58′ 29″; afterwards, when we had nearly overtaken the party, I observed the blacks were near them. We galloped towards them, to make them run away; but instead of doing so, they remained, and received us in a friendly manner, and offered us their spears and boomerangs. I let Jackey take a spear and two boomerangs; the spear we wanted for making ramrods. In return for their presents I gave them a tomahawk. These blacks are fine, tall, powerful fellows. When we overtook the party, Mr. Bourne informed me that the blacks had followed it for about 3 miles, and that one of them, a powerfully built man, about six feet high, had been so very bold, that he (Mr. Bourne) had repeatedly fired over his head without causing him any alarm; and that on one occasion, on looking round, he saw him apparently in the act of throwing his boomerang at him. These blacks told Jemmy, who understood their language, that they had seen nothing of any explorers with camels. When we were unsaddling, I was sorry to find that we had not got out of the neighbourhood of the blacks, as I observed some of them were watching us from behind some trees close at hand. Jemmy told them that I was very angry at them for following us. In reply, they said I was mistaken; that they had not followed, they had never seen us before. Shortly afterwards Jemmy had a long conversation with them, during which they informed him they had seen a party of explorers to the eastward, but that they had never seen any with camels or drays. Rich, undulating ground, covered with good grass, and slightly wooded with myall, westernwood acacia, and Port Curtis sandal-

wood, extends from the ranges in many places to the left bank of the river. Distance, 23 miles.

April 3.—Left Camp 41, situated on the left bank of the river, at a place between two isolated ranges. One of the ranges is on the left bank: I have named it Mackenzie Range. The other, on the opposite bank, I have named Herbert Range. The four blacks who left us yesterday evening paid us a visit as soon as it was light this morning: they were very communicative, and informed us that the river flowed to the southward; that it was joined about two days' journey from this by a large river from the north-east; that a long way down the river the country was sandy and destitute of grass; and that beyond the ranges in sight there were no hills. We travelled seven hours to-day along the left bank of the river, and camped. The country we saw during the forenoon was of an undulating character, and the soil rich, with myall and westernwood acacia. The grass was good, but from the absence of rain, not so fresh-looking as higher up the river. Our path in the afternoon lay near the river, over low ground, wooded with box, having an undergrowth of salt-bush and polygonum. To the eastward there was fine open undulating country. Somewhere above here I think it is probable that the river is joined by a larger stream from the westward, as it is now quite unfordable, and about 60 feet in width. Distance, 16 miles.

April 4.—Distance, 18 miles. Nothing calling for remark.

April 5.—Camp 43 is situated on the right bank of Stark Creek. We travelled to-day, in the first instance, slightly to the westward of south, with the view of reaching the river. In a few miles we crossed a large watercourse, to which I gave the name of Porteous Creek; at present dry, but with extensive flood-marks, and heaps of mussel-shells on its banks. A few miles further in the same direction, we crossed a small watercourse, which apparently joins Porteous Creek. The banks are wooded with myall. Behind these belts of myall the country rises in gentle undulations; the soil is rich, almost without trees; and from the appearance of the grass it was evident there had been no rain for a long time. In the afternoon we went north-westerly, and by that course reached the river; and after following it down for a short distance, we encamped. Distance, 21 miles.

April 6.—As this was Sunday we rested: weather cold.

April 7. Bowen Downs.—Made sun's meridian altitude A. H. 118° 12′ (I did not take notice of the index error); the latitude is by that observation taken about 8 A.M. This morning the blacks told Jemmy of a well-watered road leading to a river to the southward. On that river they said the blacks had clothes, and it was from them they got their iron tomahawks. Not long after starting,

crossed what I have named Bourne Creek. Lost our way, and travelled all night, not reaching our camp till next forenoon, and meanwhile the sextant got out of order and became useless.

April 9. The rest of party at Camp 44.—Jemmy and I left camp this morning in search of water on the route we wanted to go. We went along the plains, on the left bank of the river, in a S. and W. direction, for 8 miles. We expected to find in that distance a well-watered river, which Jemmy understood the blacks to say formed the river a short distance below the camp. As we had not found it there we went west, and reached the river in about 4½ miles further. We then followed it down for about 2 miles in a southward direction, where we found the blacks we had seen up the river. Upon telling them we had not found water back from the river, and that we now wanted them to show us the road to the next river, and would give them a tomahawk and a shirt for doing so, they promised if we would bring our party down the river they would do so. We saw here two old gins and a little girl, whom we had not seen before. One of the gins was a disfigured looking object: she had lost her nose and her lips. The little girl was about four years old; she had good features, and was fat and plump. To please the blacks, we let one of the little boys ride a horse for a short distance. After asking them to remain in this neighbourhood we returned to camp. *Distance, about* 29 *miles.*

April 10.—As I imagined, Gregory's party had traced the Thomson River to its head. I did not suppose this river was it. I determined, as we had used the most of our stores, to leave the river, if possible, and start for the settled districts. It was very vexatious to come to this resolution, as the river was flowing almost in the direction of Burke's starting point on Cooper Creek. We left Camp 44 at 9·50 A.M., and reached the place we had arranged to meet the blacks in about 14 miles. It took us, travelling steadily, exclusive of stoppages, five hours to reach it. The blacks were waiting for us, and conducted us about ½ a mile further down the river to a good place for our encampment. I gave a pound of flour to one of the black fellows. He is going to-morrow, on foot, to see if there is water in the water-holes on the road to Barcoo River.

April 11.—Two of the blacks started this morning along the line they intend taking us, if they can find water for the first stage. I spent a considerable time in repairing my sextant. I got it so near right that the index error was only four minutes, but after fastening it with a thread, I found the error was increased. This evening the blacks returned, and reported that the water-holes they had gone to see were empty. They told us of two practicable roads to the Barcoo River: one by Stark Creek from a place up

the river, the other from a place down the river; the latter we determined to try.

April 12.—We left Camp 45, two of the blacks accompanying us to show us the lower road to the Barcoo River. About a mile from camp we passed some blacks, whom our guides stopped with. Afterwards, the eldest of the black fellows came in the evening for some flour for himself and his companions. The country we have seen since leaving 44 camp has undulating features, but no hills. The soil rich, but vegetation dry from the want of rain. Distance, 13 miles.

April 13.—Camp 46 is situated near the eastern channel of the river. We are glad to find that one of our guides, who was named Wittin, had determined to accompany us. We followed down the left bank of the river to-day on undulating country, with rich soil, dry grass, and box-tree. Near the river, just above here, there are sandstone ridges, with westernwood acacia and Port Curtis sandalwood. Wittin told Jemmy that he had seen, to the eastward of here, about ten moons ago, a party of travellers, consisting of four white men and four black men. He got a shirt from them, but they did not give him any bread. Distance, 9½ miles.

April 14.—Camp 47 is situate on the left bank of the river. When we had proceeded a short distance, we observed a range right ahead of us. Wittin called it Trimpie Yawbah. Afterwards we observed other hills to the westward of Trimpie Camp, the highest of which I named Mount Pring. On the first unwooded plain we came upon after leaving camp, we saw in the distance objects which appeared to be cattle, but upon getting nearer to them we found them to be emeus. The ground we crossed was more level than the land higher up the river, and the grasses at places were good; but otherwise there was no change in the character of the country. Five miles S. ½ E. of last camp made the lat. 24° 5′ 7″. Distance, 14 miles.

April 15.—Camp 48 is situated on the right side of a long hole of water on the eastern channel of the river, at a place bearing N. ½ W. from Mount Pring. We steered for the eastern side of the Trimpie Range. Early in the day we reached a creek, showing extensive flood-marks, and with heaps of mussel-shells on its banks, but very little water in its channel. I named it Dunsmure Creek. Led by Wittin, we followed up the creek for about 7 miles, and encamped. Several emeus seen to-day, but they were so wild that none of us succeeded in shooting them. The ground is of a level character on both sides of Dunsmure Creek; the soil rich, with good grass, but rather dry for want of rain. At the place where we struck Dunsmure Creek, I made the lat. A.H. 24° 16′ 16″. Distance, 11 miles.

April 16.—Camp 49 is situated at Dunsmure Creek, N.N.W. from

a distant range, named by me Mount Johnstone. Wittin left us to-day. When we had followed the creek up about 13 miles to near its source in Johnstone Range, we had to return about 4 miles to get water for our encampment, as there was none in the upper part of the creek. We saw several emeus to-day, but, as usual, we did not manage to shoot any. The ground we saw from our path is rich, chiefly wooded with myall; the herbage good, but rather dry, from the want of rain. In the middle of the day, when we had gone back for a considerable distance on the north-east side of the creek, we got to the edge of rich unwooded downs. Distance, 17 miles—(direct 9¼ miles).

April 17. Party at Camp 50.—Jemmy and I left to go to the Barcoo River. When we had ridden 3 or 4 miles we got on the watershed of a creek on the Barcoo side of the range. About 7 miles further on we reached the main branch of what I have named Archer Creek. It had extensive flood-marks, and heaps of mussel-shells on its banks, but the water-holes in its channels were empty. After following it 13 miles further, we reached its junction with the Barcoo River. I was glad to find that the channel of the river was full of water. Returned up Archer's Creek for about 4 miles to some fine young grass, and camped. The country we saw to-day has in many places a rich soil, with grass and salt-bush. Distance, 23½ miles.

April 19.—Camp 50 is situated on the left bank of Dunsmure Creek, at a place bearing N. by W. ½ W. from Johnstone's Range. While the main party started direct for Cooper's River, Fisherman and I went to Johnstone's Range, which we reached in about 4 miles. We ascended its cliff-topped summit, and observed from it a long range of hills, from which we bore 99½° from one end, and 141° from another part. The part of the range we were on prevented me from seeing the other end of Johnstone's Range. The latitude of observation made here is 24° 34′ S. To reach the river where Mr. Bourne had moved the encampment, a short distance above the junction of Archer's Creek with the Barcoo River, we had to hasten the last 7 miles to get to it before dark. By coming on a different course from our yesterday's one, the road was not so good, and the country was so thickly wooded at places with westernwood acacia, that riding fast was too dangerous to be agreeable. 22 *miles.* (Direct distance made by party not stated.)

April 20 (*Sunday*), Barcoo River, Camp 51.—To-day we rested ourselves and the horses in latitude 24° 37′ 43″.

April 21.—Camp 51 is situated on the left bank of the Barcoo, bearing E. ½ S. from a small hill about 2 miles distant. We followed the river up on its western bank, and encamped at 5·10 P.M. We came first in a N.N.E. direction, and afterwards for a few miles in a more easterly one. Our path along the first part was between

ridges thickly wooded with westernwood acacia, and low flat country intersected by boggy branches of the river. On the flats, where the old grass had been burned, good grass had grown up. There was also good grass on the ground which had been flooded near the channels of the river. About 4 miles N.E. from last camp I made the latitude 24° 34′. Distance 15¼ miles.

April 22.—Left Camp 52, and followed up the river on its western side. The country we saw was like that seen yesterday, except being scrubby at a few places. In the middle of the day Jemmy and I waited behind the main party, and as we were riding to overtake the main party we passed nets for catching emeu, and nets for catching fish. We then passed an elderly gin and a little boy watching earnestly our main party, and immediately afterwards we came upon about a dozen blacks. Mr. Bourne informed me that they had followed him for several miles, and had persisted in approaching nearer than was desirable. Jemmy had a long conversation with them respecting the explorers they had seen, and also respecting the route towards the settled districts, which he learned some of them had visited. They said they did not remember any explorers who had larger animals than horses, and, strange to say, none who had drays. We presented them with glass bottles, an empty powder-flask, and some hair from the horses' tails. Jemmy told them we wanted to encamp, and that we did not wish to be too near them. They continued to follow us, and on Jemmy asking them why they did so, they replied they wanted a light. We gave them one, and they left; but after we had camped we found they had encamped very near us. Distance 18½ miles.

April 23.—During the second watch last night, our lives depended on the vigilance of our watchmen. The blacks came up, and probably would have overpowered us if they had found all asleep; but Jemmy, the native trooper, who always keeps his watch well, awoke us, and all of our party except one discharged their guns in the direction from where we heard the blacks. I reserved my charge to shoot at them when I caught sight of them, which I did not succeed in doing until after daylight. We set off two sky-rockets, but they did not go up well, because they were bruised, or because the sticks we attached to them were unsuitable. When the first rocket exploded, it made the blacks laugh; at the explosion of the second we did not hear them do so, as they had probably retired to some distance. After the conduct of the blacks last night, and as they approached Gregory's party in a similar way in the same neighbourhood, I fully intended to shoot at them if we had a chance; but this morning, although three approached to within 100 yards of us while we were eating our breakfast, I did not fire at them until Jemmy had warned them of our hostile feel-

ing towards them, and until they, instead of attending to the warning they had received to be off, got most of their companions, who were heavily loaded with clubs and throwing-sticks, to approach within about the same distance of our position. I then gave the word and we fired at them. The discharge wounded one and made the rest retire. Some of us followed them up as far as the horses, and again fired, and shot the one who had been wounded previously. Afterwards Jackey slightly wounded another, when Jemmy and he went for the horses. Perhaps these blacks, as they said they had visited the settled country, may have had a part in the massacre of the Wills family. We followed the river up to-day for about 18 miles. About 16 miles of the distance was along the western bank. On that side the country is inferior, and the place is thickly wooded with westernwood acacia. Near sunset we crossed several channels of the river. There was a change in the character of the country when we left the northern bank; the ridges were sandy, caused, I judged, by the junction of the Alice River, which I was afraid of following up in mistake for the Barcoo River. We were not certainly, according to the chart, so far to the northward as it; but Mr. Gregory discovered, when he went through the country, that the north bend was laid down on the chart too much to the northward. From where we crossed the watercourse we steered S.E., and after crossing several dry watercourses, reached one with water in it and encamped. Total, 18½ miles.

April 24.—We left Camp 54 this morning 9·25, and travelled up the river, and encamped on the bank of a small creek. The country we have seen from the path we have traversed, since leaving what I thought was the Alice River, is very good, with the exception of a few patches of land too thickly wooded with westernwood acacia. The land generally is thinly wooded with myall, and well grassed with the best grasses. Distance, 17 miles.

April 25.—We left Camp 55 this morning, and in the afternoon reached a creek, which I thought perhaps was a channel of the Barcoo River, and encamped on the left bank of the creek. To the southward of our path we observed a long range of hills, one of which was remarkable for its tabled summit. The country we saw was more undulated than that we saw yesterday, but otherwise of a similar description. Distance, 20 miles.

April 26.—On quitting Camp 56 we left the small creek on which we had encamped, and reached another creek with here and there water in its channel. We followed this up nearly to its source in the fine range of hills mentioned in yesterday's journal. Having left the creek, we came nearly east to the left bank of a watercourse with plenty of water in it, and encamped. The country we saw to-day was very rich, with undulating features, and the

best grasses; the timber upon it consisting of myall, westernwood acacia, brigalow, whitewood, and box. The brigalows are few and far between. The box grows along the watercourses. Distance, 14¼ miles.

April 27. Camp 57.—This being Sunday, we rested ourselves and our horses. Lat. 24° 43′.

April 28.—The greater part of the forenoon was spent in collecting the horses. We left Camp 57 at 12·35 P.M. When we had proceeded up the western bank of the creek (the side on which we had encamped) for about ¾ of a mile, we crossed it, and left it, as it became evident that its sources were in the hills to the right of the course we wanted to pursue. After proceeding in an easterly course from the creek, over low undulating ridges, we saw two emeus, which remained in our vicinity for some time, but not sufficiently near to induce any of us to try and shoot them. Half-a-mile from this brought us in a south-east direction to a well-watered creek, which we followed up for some distance, but, as it took us in a south-west direction, we returned and followed it down. This took us in a north-east direction. When we had come down the creek about 3 miles, reckoning from the place we first struck it, we encamped. The ground near here is flat and intersected by watercourses, so much so, that it is like a kind of country that is often found in flat country near a river. The land we saw to-day is rich and well-grassed, seemingly as good sheep country as any I have seen. Near last camp I made the lat. 24° 44′. Distance 10½ miles.

April 29.—When we had come a few miles from Camp 58, the grey mare on which I rode suddenly became unwell, and lying down, in a few minutes died, though in good condition. When we had come easterly about 9¼ miles, we reached the best-watered and the largest-looking watercourse we have seen for some time. Where the mare died I made the latitude 24° 44′, which nearly agrees with the latitude I got by the observations on Sunday and Monday. After reaching this watercourse, we followed it up. In coming to it, we passed through several narrow belts of land, thickly wooded with westernwood acacia. The country we saw between these belts was like the fine country described in yesterday's journal, with the additional charm of having trees of another variety of myall. The drooping acacia grows on it. I love these trees; their foliage is so beautiful, and the wood when cut has a fine aromatic smell. The grain of the wood is nearly as hard as ebony; besides, it is characteristic of the best pastoral country, as it only grows on good country, while its leaves are useful and good for stock, which are fond of eating them. Distance, 14¾ miles.

April 30.—No entry in journal.

May 1.—We left 59 Camp yesterday morning, and came in an easterly direction to a creek with a northerly course. We intended striking the creek afterwards, and unfortunately did not water the horses, but we got too far from it, and neither found it nor water, although we travelled till 9 P.M. We halted then, thinking the horses would probably find water, which we thought was not far distant from us, having heard immediately before we encamped the quacking of ducks. Our path to-day lay over rich undulating country, from which a number of hills were visible. In the morning we fortunately found we were within a few hundred yards of a hole of water. I sent Jemmy with one of the freshest of the horses to see how the country was watered to the E.S.E. On his return, he reported having found water and old dray-marks about 6¾ miles easterly from our last camp. Latitude is by that observation 25° 3′. Distance 25 miles.

May 2.—We left Camp 60 at 10·20 this morning, and for 4 miles followed the creek up from our last camp, which took us more easterly than southerly. After leaving the creek, we crossed a low scrubby sandstone range, and got to the head of a watercourse, in which we found water, on following it down a short distance. The country we saw to-day was very scrubby, with the exception of some thinly-wooded patches near the creek we left. The scrub consisted of mulgah with a few other trees. Amongst these I observed broadleaved ironbark and broadleaved box, bloodwood, currvjong, and bottle-trees. The broadleaved box-trees we had not seen previously on this expedition. The ironbark-trees are seldom or never found far to the southward of the main range. The soil consisted chiefly at several places of stiff clay, which retains an impression a long time when softened by rain. Near where Jemmy had found the water and the dray-track, I made the latitude 25° 7′. Distance, 12½ miles.

May 3.—Camp 61 is situated on the western bank, at the head of a watercourse, which perhaps flows into the Warrego River. In following the river down, which was our route all day, after crossing a short distance below camp, along its eastern bank, we crossed about half-way a creek from the eastward. Nearly all the way to-day we observed deep horse-tracks, and about 4¼ miles above camp we observed a tree marked FM (conjoined) with cross underneath. The channel of the river was of a sandstone formation at some places, and had fine holes of water. Our path to-day came over at least 6 miles of unavailable barren scrubby ridges. The remainder of the way was chiefly over well-grassed land, confined on the eastern side for the greater part by sandstone ridges, thickly wooded with mulgah. Distance, 23 miles.

May 4.—As this was Sunday, we rested ourselves and the horses. I made the latitude 25° 36′ 51″.

May 5.—Camp 62 is situated on the right bank of the river. In the forenoon we proceeded due south. In the afternoon, we had to travel considerably to the westward of south, to keep near the river, and camped on the western side of a shallow water-hole in an eastern channel of the river. Near the river the flats were good. On them the grass was excellent, with a good deal of cotton-bush and salt-bush amongst it. The back country was sandy, having kangaroo-grass upon it, and wooded with broadleaved-box, broad-leaved-ironbark, bloodwood, and mulgah. The river was well watered till we came within a few miles of the camp, where it divided into a number of shallow channels. About 7½ miles south of last camp I made the latitude 25° 41′. Distance, 20½ miles.

May 6.—We left the river, and after we had journeyed all day in a general direction slightly southward of east, we found water and encamped. After leaving the river flats, the country was poor. The soil was of a reddish colour, and, although sandy, was very hard. It was wooded with broadleaved-box and mulgah-scrub. In the first part of the way in many places it was well covered with kangaroo-grass, but in the last part of the journey it was too scrubby to be well grassed. When we had gone about 8½ miles, we crossed a low sandstone range; until we reached it we neither saw water nor the slightest sign of a watercourse. In this day's journey we saw more kangaroo and wallaby than on any previous occasion, but were so eager to get water that we did not try to shoot them. Distance, 25 miles.

May 7.—Camp 64 is situate on the eastern bank of a small creek, which has a south-west course. When we had come in an E.S.E. direction about 9 miles, we saw a range of hills a-head of us, and about 2 miles further on we crossed a creek, with extensive flood-marks, and a south-west course. About 3¼ miles further we crossed a small creek, and encamped. Our path for the first part of the way was over poor land, thickly wooded with scrubby trees; the latter part over land generally good, with good grasses. The land near the creek was particularly good, and thinly wooded with box. Having found four emeu eggs to-day, Mr. Bourne and I made an excellent dinner of one of them boiled. We thought it had as delicate a flavour as a hen's egg; the rest of our party made emeu-egg pancakes, and, although they had no salt or sugar, they relished them exceedingly. Distance, 14¼ miles.

May 8.—In the first part of to-day's march, which was particularly scrubby, we crossed a high sandstone range. Further on we crossed a large creek and encamped. The land we crossed was very good, the soil a loose sand with a luxuriant growth of good

green grass. The trees were of the following kinds: broadleaved-box, broadleaved iron-bark, Moreton Bay ash, bloodwood, and cypress-pine. Distance, 12 miles.

May 9.—Travelled down the eastern bank of the river all day, which took us nearly two points to the westward of south. Along our path, near the bank of the river, the land was sandy, wooded with broadleaved-box, broadleaved-ironbark, Moreton Bay ash, bloodwood, and cypress-pine. At a place about 6¾ miles this side of Camp 66 I made the latitude 26° 13′ 10″. At a place about 8¾ miles above Camp 67 we observed trees marked "1861, J.A.C.H. U.C.H.B. A.K.C." Distance, 21 miles.

May 10-11.—(No entries.)

May 12.—Camp 67 is situated on the left bank of the river. Last night we had severe frost, which produced ice in our tin vessels. When we had gone 11½ miles we crossed a sandy creek, and followed it down in a w.s.w. direction for a short distance. Finding no water in the creek we left it, and continued on our old course. Near sunset, when we had gone about 9 miles without finding another watercourse, we went in a more easterly direction. We continued going on after dark, until nearly 2 o'clock on Sunday morning. After waiting for Jackey and Jemmy, who had stayed behind yesterday, we started at 11·12 without them. We travelled all day without finding water; but after dark we found a small watercourse, which we followed down for about four hours, still without finding water. Here we encamped. In the course of the day Jackey and Jemmy overtook us. Their excuse for being behind was their having turned back to look for a pistol Jackey had lost. Jemmy, I was sorry to find, was severely burnt from his clothes having caught fire while he was asleep on the previous night. I determined to return to water from here, as the horses had been two days without any. After travelling almost incessantly for upwards of seventy-two hours we reached Camp 68 this morning at 9. Although there was plenty of water in the creek here, there was more lower down, at the place we crossed on our outward route, when we were 11½ miles S.S.E. from Camp 67. The horses looked wretched when they had been twenty-four hours without water, and, as they had been seventy-two hours without water when they reached here, they certainly looked most pitiable objects. Whilst searching for water the weather was most favourable, although sometimes freezingly cold when travelling at night; so much so that, to keep ourselves from getting benumbed, Mr. Bourne and I often walked. Being able only to take a small quantity of water with us, Jemmy, who was suffering very much from his back, injured by the burning, felt often very thirsty, but, poor fellow, we could only spare him a small quantity. The

country we saw on this journey was so bad that I did not wonder at its not being stocked, and only a few tracks of cattle are to be found on it. The land very level, with poor sandy soil. Where it is not thickly wooded with thick mulgah-scrub, which chiefly prevails, it is grassed with triodia, and wooded with rather broad-leaved-ironbark, broadleaved-box, and apple-trees. The apple trees we had not previously seen on this expedition. *Length of outward route*, 61 *miles*. *Returning*, 16 *miles*. Distance (direct) for the three days, 45 miles.

May 13.—Started at 7 this morning, N.N.W. ½ N. for 5 miles to Camp 69. I made the latitude 26° 38'. *Length of return route*, 43 *miles*.

May 14.—We intended proceeding down the creek to-day, but when we had got the horses ready to start, we found that Jemmy was suffering so much pain from the sore on his side and back, that he could not proceed. When we were endeavouring to persuade him to try and go on, he asked us to go ourselves and leave him behind. Yesterday evening I dressed his sores with pomatum, and put a bandage round his body. As he supposed the bandage caused him additional pain, we took it off and dusted his sores with flour.

May 15.—Camp 68 is situated on the west bank of the creek which we followed down to where we encamped. This track took us in a serpentine course, and (generally) a north-westerly direction. When we had travelled 12¼ miles or thereabout, we crossed our return track. In the first half of to-day's journey, to avoid losing the creek, we had to keep very near to it, because of the sandstone ridges along its banks preventing us seeing the course of the creek, had we kept back from it for the purpose of cutting off the angles. The latter half was without water, but as we did not know that we kept near the creek, in the hope of getting water for our encampment. The country we saw, especially on the upper part of the creek, was poor and of little value. Near the creek we observed clumps of mimosa, the kind that is commonly called green wattle. Distance, 20 miles.

May 16.—When the horses were saddled and packed, the main party proceeded down the creek, and Fisherman and I stayed behind to mark trees at our encampment on the west bank of the creek. Afterwards we proceeded down the creek, and, in trying to cut off the angles, we passed the junction of the creek with the Warrego River, and got up the river 3 miles before we discovered our mistake. After watering our thirsty horses, we followed down the eastern bank of the river for 16½ miles to where Mr. Bourne had encamped, and was glad to find he had shot a large turkey. The river has fine reaches of water, but the banks are too thickly

wooded with mulgah-scrub to be of much value for pastoral purposes. We observed blacks on the opposite banks of the river to us. One of them was up a hollow tree cutting out a honeycomb or an opossum. Fisherman had a conversation with him, but as he said the black fellow did not know where there were any stations, I do not think he understood him. There were barking curs with them, which made us suppose we were probably not far from stations. *Distance*, 21¼ *miles.* [Distance made by expedition not precisely stated.]

May 17.—We followed the river down all day till it became dark, in the hope of reaching a station. We were disappointed in our expectations, and did not see any tracks of cattle. Along our path on the east side of the river, about ¾ of a mile below camp, we observed a tree marked A. After passing between a hill and the river, about 6¼ miles below camp we crossed extensive flats and a low sandhill. The country was thinly wooded in some places, and scrubby at others. The land, although not very rich, had the best grasses, and cotton, and salt-bush upon it; the sandhill was wooded with cypress, pine, and other trees. Distance, 23 miles.

May 18, Camp 71, River Warrego.—I would have gone on to-day if Mr. Bourne and Jackey had been with us, as we have only a few days' rations. Very anxious towards afternoon about Mr. Bourne and Jackey. Meridian of the sun, A.H., 86° 23″, lat. 27° 5′.

May 19. Camp 71.—Fortunately the horses were not all mustered until 3·20 P.M., as, shortly before they were so, Mr. Bourne and Jackey arrived. If we had found the horses as early as usual we would have been looking up the river for Mr. Bourne and Jackey, where we should not have found them. They had lost our tracks and followed down the river. We were exceedingly glad to see them, and to find that they had brought a large portion of an emeu with them, which they killed yesterday. Mr. Bourne observed, in the course he had pursued, a tree marked E. O. on one side, and on the other side E. W. C. over C. During the morning I washed on the edge of the river near a deep water-hole, in some clay and pebbles, in search of gold, but did not find any. Came down on the eastern side of the river and encamped, in latitude 27° 8′. Distance, 6½ miles.

May 20, 1862.—We left 72 Camp this morning, 9·20, and moved down the river after sunset. In that time we travelled about 21 miles. We hoped to have reached a station to-day, and would have gone further if we had not been delayed by getting on to a cattle-run, when, as soon as our packhorses saw the cattle moving, they took fright and galloped off. We were very glad to

get to this cattle-run, as we had used all our flour, excepting what would do us for two days; and if it had not been for the emeu Jackey shot, our food would have been entirely exhausted; we had half doomed one of our horses to the butcher's knife. Distance, 21 miles.

May 21.—This morning we followed down the river for about $2\frac{3}{4}$ miles in a S. and by E. direction, and reached the station occupied by Mr. Williams, where we received a most hospitable reception, and learned the unfortunate fate of Burke and Wills. Here I took sights, and made the latitude 27° 38′.

APPENDIX.

(A.)

From Journals of MESSRS. LANDSBOROUGH AND BOURNE.

Excoecaria.—A good-sized bush or small tree, occupying the low depressions above the saline alluvial ground, on the Gulf of Carpentaria. It is milk-flowing, but poisonous.

Erythuna, or coral-tree.

Pigweed.—Portulaca, or the native purslane, a creeping annual, of a reddish-green colour, and an excellent vegetable.

Triodia, sometimes called spinifex, or porcupine-grass, is a true desert plant, and, at the end of each leaf, it is so armed with short prickles that horses dread going through it, and stock never touch it, except when it is very young or they are starving.

Gidya.—A native name; the botanical name cannot be given without a specimen.

Westernwood Acacia.—Same as Gidya.

Roley-poley.—An annual salsolaceous plant. It grows in the form of a large ball, several feet high, on rich soil. It withers in the dry season, is easily broken off and rolled along by the winds—hence its name.

Cotton Vine.—A plant, probably the same cynanchum of which the unripe milky pod is eaten by the natives about Lake Torrens.

Polygonum Cunninghami.—A very wiry shrubby bush, which always indicates that the ground where it grows is liable to be occasionally flooded. It is the same as the one from the Murray and Darling.

Mulgah Scrub (an acacia).—This is frequently mentioned by Stuart; its botanical name is not known.

(B.)

[The following extracts from the Proceedings of the Royal Society of Victoria at its meeting of the 18th of August, 1862, convey in a condensed form Mr. Landsborough's conclusions as to the results of his journey.—ED.]

"It is satisfactory to me to state that the country I saw near the Gulf of Carpentaria I consider to be exceedingly well adapted for sheep-runs, and that I am of opinion that the most valuable country is the Plains of Promise, and second to them the plains on the Gregory River.

"Of the country I have seen on the last expedition, which had not been previously explored, I consider the most valuable, on which I am sure sheep will thrive, are the plains on the west bank of the Leichhardt River, and those on the Flinders River. Of the Leichhardt River country, I can but speak of a small portion, as I only followed it up for about 8 miles from where the tide came to a fine basaltic ford, where the water was fresh. Of the Flinders River country, the best I saw on the lower part of the river is situated between 18° 26′ lat., and 19° 20′ lat.; and of the upper part of the river, the best is the last 100 miles I saw." Mr. Landsborough further gives it as his opinion, that whereas it had been supposed hitherto that the Albert River was not a good place for landing horses, the *Firefly*, a vessel of 200 tons, went 20 miles up that river, and the horses were landed without difficulty, in fact they walked ashore. He was delighted to find so fine a country. He had had twenty years' experience of Australia, and he had never seen better country for stock than he found on the shores of the Gulf of Carpentaria. His mission was to search for Burke and his companions, but he could not shut his eyes to the fact that there was a fine country before them, and that country lying idle—a country which, through the exertions of Burke and his companions, had been opened to the world. The pastoral interest was a great interest still in Australia; and he held it to be a great pity that the stock of the country should be boiled down for tallow when Australia is the finest country in the world for growing wool. In his first expedition he proceeded in the direction of Central Mount Stuart, with the view of trying to discover whether Burke had gone on Stuart's route; he succeeded in travelling about 210 miles, the first 100 of which he followed up a running stream, but after leaving its source he lost much time from the scarcity of water. His first impression regarding the stream referred to was that it was created by rain, but as it was evident that no rain had fallen for months, he concluded that this idea was incorrect. He afterwards discovered that it owed its source to springs of a kind which he had never before met with, the stream from which, near its source in the valley of the Gregory River, was sufficiently powerful to turn a large mill-wheel. On his route back to the depôt he found that this stream, at a point distant from Carpentaria about 80 miles, divided into two branches, one of which flowed into the Nicholson River, and the other into the Albert. As an evidence of the superior quality of the country through which he passed on his expedition to the south-west, he might mention that the horses travelled as well as if they had been stable-fed. He had travelled in Queensland and New South Wales, and had never found horses stand work so well as those horses did at Carpentaria.

"They followed up the Flinders River for about 280 miles through a magnificent country. When they reached this point they left the Flinders, and in less than 20 miles further got to the watershed of the Thomson, one of the main heads of the Cooper River."

"He thought the Flinders River was about 500 miles long. The most

elevated land on the Flinders appeared to be about 1000 to 1500 feet high. The climate of Carpentaria he believed to be very dry, excepting in the months of January, February, March, and April. The bed of the Flinders, where he left it, was 120 yards wide, with a shallow stream flowing along its surface. His party came through the country at a very favourable season of the year. Thunderstorms and rainy weather might be expected until the end of April, and sometimes as late as May. On the heads of the Gregory River the country was of a basaltic character, and on the Flinders there was abundance of quartz and iron-bark country. He saw about 50 miles of the latter description of country, and believed from his previous knowledge that it extended to the coast. The range dividing the Flinders from the Cooper River country he estimated to be from 1000 to 1500 feet high, while that which he crossed on his expedition to the south-west, though about the same height, was of quite a different character, being composed of a basalt different from any he had seen before. The slopes of the table-land were grassed with spinifex, which is almost worthless. All basaltic country he had seen previously in other parts of Australia was exceedingly well grassed.

"He had no doubt that the rivers on the north side of Barkly's Table-land were supplied by springs. Barkly's Table-land divides the northern from the southern waters. He had never been to the west of the Thomson. Immediately after leaving the watershed of the Flinders he got on to that of the Thomson. On returning to the Albert from his expedition to the south-west he came to a river, which he named the O'Shanassy, which has long and deep reaches of water. In the water-holes on the southern side of Barkly's Table-land, which he followed down for 70 miles, he found plenty of fish, and his impression was that these fish came up from rivers farther to the south-west. It was the dry season when he was there, but he could see traces of water where it had spread for several miles across the country in the wet season. He had no doubt that if he had been able to go farther down he should have got to a large river.

[Dr. MUELLER here observed that this seemed to augur well for any expeditions that might be undertaken from the south of the Gulf of Carpentaria to the south-west. He begged to ask whether, in following down the tributaries of the Thomson, Mr. Landsborough met with any traces of Dr. Leichhardt? It would appear, from the information supplied by Mr. Walker, that Leichhardt took the tributaries of the Thomson in order to be able to skirt the desert of Captain Sturt.]

"He could not find Walker's tracks, and believed it was impossible for Burke and Wills to have gone within sight of the sea, because salt-water creeks spread all over the country for 10 miles from the sea."

(C.)

Extracts from Journal of Mr. BOURNE, Mr. LANDSBOROUGH'S second in command.

"As it is more than probable that our track will be the route to the Flinders and Carpentaria country from some districts, it may be useful to remind such readers as may have Queensland experience, that the thick scrubs, rugged ranges, and the long impassable grass of that country, which offer such obstacles to the traveller with sheep, are nowhere to be found on the western side of the Dividing Range. Our track goes through country which, on the whole, may be said to be *open* and *thinly* grassed, and partakes in its general

characteristics rather of the features of the interior than of the coast. As the squatter will, of course, be the first to put this country to use, it is important that he should know that his difficulties with stock will occur in the settled districts, as on the Darling and Warrego rivers, where both feed and water are often scarce; but that on reaching the Barcoo his trials on these heads will be quite at an end. Excepting in the matter of crossing creeks or rivers, he will meet with no obstacles to wheeled vehicles, and will be able to feed before him flocks of 2000 sheep without any difficulty.

"*October* 1.—Landed early on Sweer's Island. Saw tree with '*Investigator*, 1802,' cut on it, besides other names. The *Investigator's* crew sunk a well 12 feet deep here, which I see, with one or two others, has fallen in.

"*Oct.* 14.—*Firefly* weighed at 8 A.M., and made the entrance of the Albert River. Channel deepens very much on nearing the river, soundings being from 3 to 5 fathoms. The channel often widens, and its banks are composed of hard sand, the mouth at the entrance being 350 yards wide, or thereabouts. After entering, water deepens to 9 and even 10 fathoms. The banks are low, but not perfectly covered by the tide, with numerous small creeks leading to or from the river. A little mangrove is visible, but it is not the principal timber of the river-banks. We entered about 9 A.M., wind fair, a fine summer morning, the first vessel that ever sailed up the Albert. The Albert, as far as we have gone, 5 miles, is the finest river, with the deepest water yet known in Australia. At 4 P.M., on shore once more, having struck a shoal, though with 6 fathoms of water alongside. The rise and fall of the tide here is as much as 17 feet; a large vessel may enter, and will find water enough when in. Tide flows 9 hours, and ebbs 15.

"*Oct.* 15.—We are now about 7 miles from the mouth of the Albert. The Nicholson River is about 5 miles to the westward, the intervening country having the appearance of being flooded at times.

"*Oct.* 19.—Mr. Moore arrived this evening, bringing news of Captain Norman having discovered a large river to the eastward of the Albert, and about 2 miles from the mouth of the latter. They went about 2 miles up this river, and found it deeper and wider than the Albert, though not fresh; we suppose it to be the Leichhardt. I omitted to say that on the 16th we came on a large vein of freestone."

[The following mode of equipping or managing packhorses is both interesting and instructive.]

"*Saturday, November* 16.—Every one busy in preparing for the final start. The pack and other saddles were placed in a row on the ground, each load lying alongside its saddle, both marked with the same number, to prevent confusion, and to ensure the same being always together. To ensure perfect regularity, each horse with his load and saddle should be numbered or named, in order that the same load and saddle may always go on the same horse, and their backs, which are the great difficulty, be properly and effectually taken care of. Our pack-saddles are the ordinary ones, lightly made and fitted with breeching, breastplate, and surcingle. For each saddle there are two strong canvas-bags, to answer the part of panniers; they are square and with a lap, just in the shape of the old-fashioned pockets which are found against the inside of the doors of stage-coaches; the lap, which is to keep the rain from the contents, being fastened down by a piece of rope through an eyelet-hole. This bag, edged with good half-inch rope, is hung on hooks fastened below the pommel and cantle of the saddle, by means of a leather-covered eyelet-hole in the rope at each of the upper corners of the bag. This operation is performed in a moment, and the surcingle over all binds the load. Into these bags are put the stores sewed in several calico bags, weighing about eighteen or twenty pounds each. In each of these flour-bags was a bottle of rum or lime-juice, where it is pretty free from the risk of breakage. Medicine, sewing gear

tomahawks, spare horse-shoes, and nails, &c., were also packed in bags of this description, besides two horse-hide water-bags, each holding five gallons. Round the neck of each horse is a strap, which is never taken off, to which his hobbles are buckled, immediately they are removed from his feet, and a halter on each of the horses' heads makes his gear complete."

"The range of the Thermometer at the Depôt in the Albert River has been from—

Oct.	27.—Noon	.. ..	88 degrees	Nov.	21.—Noon	.. ..	100 degrees
	28.— „	.. ..	88 „		22.— „	.. ..	96 „
	29.—4 a.m.	.. ..	79 „		23.— „	.. ..	92 „
	29.—2 p.m.	.. ..	90 „		24.— „	.. ..	95 „
	30.—Noon	.. ..	90 „		25.— „	.. ..	100 „
	31.— „	.. ..	92 „		26.— „	.. ..	91 „
Nov.	1.—2 p.m.	.. ..	91 „		27.— „	.. ..	86 „
	2.— „	.. ..	91 „		28.— „	.. ..	93 „
	3.— „	.. ..	91 „		29.— „	.. ..	90 „
	4.— „	.. ..	90 „		30.— „	.. ..	81 „
	4.— „	.. ..	99 „	Dec.	1.— „	.. ..	92 „
	5.—Noon	.. ..	92 „		2.— „	.. ..	93 „
	6.— „	.. ..	90 „		3.— „	.. ..	91 „
	7.— „	.. ..	90 „		4.— „	.. ..	94 „
	8.— „	.. ..	90 „		5.— „	.. ..	93 „
	9.— „	.. ..	94 „		9.— „	.. ..	89 „
	10.— „	.. ..	90 „		10.— „	.. ..	90 „
	11.— „	.. ..	90 „		11.— „	.. ..	90 „
	19.— „	.. ..	91 „		12.— „	.. ..	91 „
	20.— „	.. ..	94 „				

"*December* 24.—A heavy fall of rain, accompanied by much thunder and lightning; all grass, &c., springs up rapidly. Night, cool; thermometer at 80°.

"When we came here in October, though water lay on the ground, the grass was dry and parched. The grass is now very green and long. It is a fine country about here, and well suited to horses, sheep, and cattle. There are facilities for fencing; water-carriage is at hand, and the Indian market contiguous.

"The weather appears to be getting a little cooler, and what Gregory says about the seasons appears to be correct, viz.: the wet season—December, January, and February; spring, or cool season—March to July; dry, or hot season—from August to November. There are no hot winds, and at no time does the thermometer rise higher than in Victoria or New South Wales.

"*Sunday, January* 5.—There is an evident change in the weather during the last fortnight; it is decidedly cooler, and the mosquitoes are not so numerous. The prevailing cool wind is from the north."

Mr. BOURNE's *Conclusions.*

"The failure of our party in tracking out the course of the unfortunate Burke and his comrades, as well as Walker and his party's want of success on the same errand, arose from the simple fact, of which the originators of this expedition and many others seem not to be aware, that tracks, under many circumstances, become almost immediately obliterated, as Burke's proved to be for long distances together. One fact, however, of some importance, we, with M'Kinlay and Stuart's parties, have assisted to put in its true light, which is the perfect sufficiency of horses for the purpose of exploring in Australia. There is, indeed, no question that they are immeasurably superior in the bush to bullocks, as they will be found, in inexperienced hands, even to camels.

"One of the circumstances which struck me very forcibly on our trip, and is in itself a remarkable commentary on the nature of the country which we passed through, is the great scarcity of animal life. Of large game the emu is certainly the most numerous, kangaroos and opossums being of very rare occurrence. One of the results of this is that the natives are not numerous, and are, probably, very hard pressed to sustain life on their very indifferent food. The long droughts which certainly occur in that part of the country which lies between the Barcoo and the Darling must, indeed, be very trying to these people. Such droughts, I have no doubt, are both severe and frequent, as a thousand circumstances show, and will often make travelling most difficult through this region, as far at least as stock is concerned. In fact I am informed, whilst writing this, by an excellent bushman, who has just returned from the neighbourhood of the Barcoo, that even now this country is probably quite impassable even to a horseman, and certainly so to persons travelling with stock. It is to be hoped that this will become known to such adventurous pioneers as think of transplanting their household gods to the fertile banks of the Flinders.

"At the same time I cannot speak too highly of the magnificent country in the neighbourhood of the Gulf of Carpentaria, embracing as it does the boundless "Plains of Promise;" nor do I think the statements of all previous explorers at all overrated in pronouncing it as an unrivalled sheep-country. An opinion too generally prevails with regard to the deterioration of wool in all tropical climates, without making any allowance for locality, elevation, &c., but in this part of the Australian continent at no period did the thermometer rise higher than 103° during the hottest months; the nights are always cool, and the power of the sun is counteracted by the prevailing trade-winds. Captain Stokes also, when exploring this country some years back, mentions the range of the thermometer as remarkably low, so that these well-known facts are, I think, quite sufficient to do away with such impressions. It is not, indeed, out of place to remark that stockowners who have been accustomed to the settled districts only should, before starting on a trip of this sort, secure the services of some one as a leader who is used to travelling in these regions."

(D.)

As it is desirable that all the routes from the Darling towards the Barcoo River should be known, the following letter from Mr. Neilson is appended. The route he describes is almost on a direct line from Mount Rankine to Carpentaria.

"Kennedy's XIX Camp, River Warrego, May 22, 1862.

"DEAR SIR,—Agreeably to your request I beg to furnish you with a few memoranda of a journey made by Messrs. H. and F. Williams and myself from Mount Rankine on the Darling towards Cooper's Creek. We left the Darling on the 22nd of June, 1861, and after crossing the Talywalka Creek at 6 miles, camped on Mulyoh Spring, course N.W. by W., distance 25 miles. Our next day's journey was to Wentholey, on the Paaroo Creek, upon the same bearing, and a distance of 40 miles. We then followed the Paaroo Creek upward on a general course of N. by E. ½ E. to the 29th parallel, when we struck out to the north-west, and on rising the range saw a large sheet of water. Camped upon it. It proved to be a lake of about 25 miles in circumference, and very shallow. Our distance travelled, 23 miles from the boundary.

Next day followed the same course, and camped at 30 miles on a large clay-pan. Followed on the next day, and at 10 miles came on a Boree Creek with water. Followed on, bearing to the northward of N.W. about half a point, and camped on a lateral creek containing pools of water and polygonum flats, and on examining the bed of the creek found some crawfish eyes, and judged to be in the vicinity of a large water. Distance travelled 26 miles. Next day followed the creek on a N.N.W. bearing, and at 11 miles came to a large creek running rapid, and having flooded flaps extending 2 miles from its bed, and bearing marks of very high floods. We crossed the creek, and extended our journey about 15 miles to the west; the country being cut up by creeks not then flooded, but bearing evidences of high floods. Our rations being short, we turned back. From this point I consider our position to be within about 35 miles of Cooper's Creek. We followed the creek we left, running down for about 50 miles on a S.W. by S. course. A larger volume of water comes down this creek than what comes down the Warrego, and it contains some fine reaches of water where the creeks meet and form one channel. I believe it to be identical with the Nive of Mitchell, never traced out, and in its position with the Paaroo forms a line of communication practicable in all seasons from Mount Rankine on the Darling to Cooper's Creek, and by Cooper's Creek upwards to the Thomson, completes, with your discoveries, a perfect and practicable line of communication to Carpentaria.

"I have doubt to venture an opinion that it is quite practicable to make a cross-country track from this to the junction of the Thomson and Cooper, from the knowledge I have formed; but I think the requirements of the case are better met by striking the Cooper where it takes the turn westward (*i.e.* where Sturt followed it to the east), that point being better adapted to the wants of the more southern settlers.

"I have forwarded a tracing of my route to Mr. Gregory by my letter of February 26th last, and just give you the foregoing crude data to go upon, and of which you may make what use you think proper.

"I beg to remain, &c.,

"JOHN NEILSON."

"— Landsborough, Esq."

Note by Mr. Neilson in letter to Captain Cadell, dated Warrego River, 22nd May, 1862:—"I consider that Mr. Landsborough's route, as now laid out, will be that adopted by the Eastern colonies to Carpentaria and the N.W., South Australia availing itself of Stuart's route."

The head of the Barcoo River was discovered by Sir Thomas Mitchell, who named it the Victoria River. He described it as probably having its outlet at Carpentaria. Kennedy was sent to trace it; but, unfortunately, he had a dry season to contend with: so much so that some distance below the junction of the Thomson he found its channel perfectly dry, and had to return. He followed it, however, sufficiently far to enable him to make tolerably sure that it was the head, outer, of Cooper's Creek. Gregory afterwards, by following it down on his route to South Australia, ascertained this to be the case. Another river, previously discovered by Captain Wickham, in Northern Australia, had been called by him the Victoria: in consequence of this, and of Kennedy having learned the native name of Mitchell's Victoria to be the Barcoo, it is now generally known by that designation.

4.—*Journal of* MR. WALKER *from the day he left Macintosh's Station, on the Nogoa, to that of his arrival at the Albert River, Gulf of Carpentaria.*

On the 15*th Sept.*, left Mr. Macintosh's station on a creek flowing into the Nogoa, which I crossed on the 19th, and then went to the north to hit Poma, which tributary of the Claude takes its rise at my pass over the main range; this is a great détour, but by this means I avoided the dense brigalow scrub which intervenes between the Nogoa River and Salvator Lake and the pass. On the 20th we reached the beautiful Emerald Downs, on Poma Creek, camped there the 21st, and arrived at the foot of the pass and my old camp on the 23rd; the grass had caught fire from my camp, and was now a fine sward. We camped on the Nivelle the 25th. My first marked tree is on Emerald Downs, as that was new ground to me. The 26th we pushed down to the Nive, about 5 miles above my old No. 11 camp. The next day, 27th, crossed over to the Victoria, and camped (No. 6) below my No. 29 tree. On the 28th, 29th, and 30th, pushed down the Victoria by fair stages, and on the morning of the 7th October found Camp 10 was in long. 146° 1′ E., lat. 24° 34′ S. Whilst camped here we searched for the L tree seen by Gregory; but as we had seen his 22nd (XXII.) tree on the north bank, we searched on the same for the L tree and it was not until the 5th Jingle and Mr. Haughton found it on the south bank. In the meanwhile I had found another L tree 2 miles below our camp on north side, and 7 below the tree seen by Gregory. I looked for an open road N.N.W., but was checked by a dense, almost impenetrable scrub of acacia. Mitchell calls this acacia "brigalow," but that is incorrect, for it differs much from it, and I have seen but two or three real brigalow since we crossed the ridge dividing the Nive watershed from that of the Victoria. The blacks call this acacia "gurrt." Brigalow they call "noorwool." A little below the second L tree, I found I could pass round the termination of this scrub. I surmise that Leichhardt intended leaving the Victoria at the tree seen by Gregory; was stopped in his N.N.W. course by the same barrier encountered by me, and turned back to camp at the tree found by me, subsequently clearing the scrub where I rounded it. His track, if he had dry weather, would, on this basaltic soil, be soon obliterated.

October 7.—There was much difficulty in catching the horses this morning, owing to their having improved so much during the last few days' spell. Passed by Leichhardt's second L tree; thence over a succession of downs and plains, intersected by narrow and

open scrub of the acacia the blacks call "gurrt." Rain at night. Distance, 17 miles.

Oct. 8.—Course still N.N.W. Crossed a sandy creek with a large bed, but no water; it was here running through sand-hills, but lower down I could see it opened on the downs and plains we had been traversing all morning. One mile beyond this we killed an emeu. Passed another creek, with a pool of water, luckily for the horses. We now ascended a high downs ridge, surmounted by a belt of scrub. Still N.N.W. We had reached the division of waters betwixt the Alice and Victoria. The first creek crossed to-day was no doubt that crossed by Sir Thomas Mitchell, and which he marks on his map as a deep rocky channel. Last $5\frac{3}{4}$ miles was through sandy box country, clothed with a grass like knitting-needles. Camped without water at dusk. Distance, $20\frac{1}{2}$ miles.

Oct. 9.—Shortly after starting we found a pool of muddy or rather milky-looking water; the horses indulged in a good drink, and we filled two of our excellent water-bags—last night we found the benefit of them. I now turned to my course again N.N.W., which we followed till I discerned symptoms of a watercourse trending N. by E. 10°. A very short distance showed I was right, and I followed it through a scrub to where it joined a larger creek, which flowed W.N.W. This creek I followed to camp (No. 13), at a place sufficiently open and well grassed for my purpose. This creek had, after we came on it, received two tributaries from the north-east, and had now abundance of water, possibly, but not certainly, permanent. Except the last 6 miles, the ground was the same sandy box country, with the same grass, as yesterday evening.—Distance, 16 miles.

Oct. 10.—To-day travelled over a tableland of sandy ground, with the same needle-like grass as yesterday. Then descended into a broad sandy creek, with reeds, and which had not long ceased running; I called this the Patrick, after one of my old comrades (aboriginal). The Patrick now ran N.N.W. 30°, and then N.N.W. 25°; I therefore followed it till it turned N.W. 45°; but I still followed it, for the heavy sandy ground and an oppressively hot day I saw was distressing to the horses; at the end of another 2 miles it turned N.N.W. 25°, when a half-mile's ride brought us to a long reach of water, at which I camped, as the day's work was too much broken into. Camp No. 14 is about 9 miles from the Alice. When I left the Victoria, I laid down in pencil, on Mitchell's map, what I supposed to be the probable course of the Alice, also a tributary which exactly answers to the creek we were on last night, and which I have now called the Macalister. The Patrick I fell in with 3 miles sooner than I anticipated, but its northerly course

makes up for that. I hope to fall in on the other side of the Alice with a tributary coming from the N.N.W., possibly from the north. The advance party to-day saw very old tracks of horses, and apparently mules, going down the Patrick. I much regret not having seen them, as they must have been Leichhardt's. Distance, 11 miles.

Oct. 11.—Started Mr. Macalister, with instructions to travel N.N.W. by compass. I pulled him up at a beautiful camp, on a small creek, with excellent grass. The country, after the first 4 miles, was all plains and downs, intersected by small belts of the gurrt (acacia) scrub. The last 5 miles were over very fine downs, clothed with that excellent grass I call rye (because it always grows near barley-grass). From these downs I saw the range, about 25 miles to the east. Distance, 9 miles (presumed).

Oct. 12.—To-day we rode N.N.W by compass, over fine very high downs; crossed two small creeks flowing from them N. by W., and camped at the head of a third. The range now lay about 20 miles east, and betwixt us and it there was a fine downy valley, evidently well watered. Day cool and pleasant, and horses doing well on the excellent feed. Latitude by observation of Camp 16, 23° 17′ S. Night cool; thermometer at daylight, 50°. Distance, 15 miles.

Oct. 13.—Our course N.N.W. by compass, took us down the creek we had camped on, until it joined another water in several places. We crossed this creek, and at the end of 7½ miles from our camp we crossed a creek full of water, with an anabranch flowing to the south-west. This I take to be the Alice. Hitherto we have been on fine downs all day; within half a mile farther we crossed a tributary coming from the north, and then another tributary. By keeping our course N.N.W. we again crossed the first creek, and camped on a fine reach of water. In the first tributary we saw the finest reach of water I have seen this side of the range, and at it was more than one black's camp. About 1 mile lower down than where we crossed the Alice, was a range on the right bank, which I named Mount Rodney, after one of my Murray men. As all three creeks meet there, I expect there must be a large quantity of water at the foot of it. The two tributaries both flow through acacia (gurrt) scrub for the last 5 miles; but where we have camped the country is more open, with promise of improvement. It will be observed that we have seen very little permanent water; but by following down the watercourses into the valley which lay to our right the last two days, I would expect to find abundance. Distance (direct) 11 miles.

Oct. 14.—The country at first was more thickly covered with acacia than suited me; and as we now had hit the creek again, I crossed it, and travelled parallel to it for a short distance 60° W. of

N. by compass. The country now opened, and I resumed my N.N.W. compass course, which in about an hour and a quarter brought us to the summit of the downs ridge which separates the watershed of the Alice from that of the Thomson. Some low ranges were seen to the east, about 5 or 6 miles off, and a small one on the downs to the west, about 3 miles, is probably where the two creeks we have left take their rise. We now made 10 miles more over the downs, and as we descended stony plains came to a beautiful river, running W. by N. This, which is no doubt a tributary of the Thomson, I have called the Coreenda. Mr. Gregory, when he left the Thomson, says that river is formed by the small water-courses emanating from the sandstone ridges; had I thought that, I would not have ventured where I am now. This is splendid sheep country. I have no doubt that many of the holes in the Coreenda are permanent; but it is not possible to tell which, as that river has not long since ceased running. It floods occasionally about a quarter of a mile on each side, except where the downs approach the bank. The gum-trees look as if drought were a complete stranger to them, so fresh and healthy-looking are they. Distance, 14 miles.

Oct. 15. At Camp 18.—This day was one of disappointment, for the boy Jemmy Cargara returned in the afternoon without three of the horses, which he had been seeking since daylight. This is the first time he has failed. I now sent out three men on horseback, and they returned with the horses at three. Shortly after I had unsaddled the remainder, Coreen Jemmy and Patrick reported having seen the tracks of a considerable number of horses. I sent a party to examine them; they returned and reported there was no doubt of the tracks; that they were very old, and had been there near a fine lagoon, about 2 miles above my camp, and in wet weather. Aneroid, 29·5.

Oct. 16.—The early part of to-day's journey was over plains covered with gurrt, at times rather too close; thence past a water-course and two lagoons, to sandstone ridges, with needle-grass—very uncomfortable travelling. Four miles from the lagoons we crossed the well-marked tracks of a very large party going a little N. of W. These tracks were very old, and had been made in wet weather. They will be visible probably for years to come, whereas mine, made in dry weather, will be obliterated the first rainy season. We then came on to the opposite declivity of the sandstone ridges, and from thence saw a high peak which I have called Mount Macalister, being 5° N. of W. by compass; and another bluff mount which I have called Mount Horsefeldt. I now perceived why Leichhardt's tracks had been going west. He probably camped on the Coreenda, above where my men saw the horse-tracks; thence travelled parallel to my course, and, being higher up the ridges, saw

the peak sooner than I did, and turned off towards it. I now saw I was getting too intimate with the dividing range, and altered my course to north-west by compass. One mile brought me to a small watercourse, with many small pools of temporary water, and, as there was a sufficiency of good grass, I camped. How is it that the blacks here have iron tomahawks? One has evidently a broad axe. The blacks on the Nive, who are much nearer the settlements, have only stone tomahawks, some very fine ones. Distance, 25 miles.

Oct. 17.—Started early on a north-west course, when, having crossed a high ridge, we came on a river running to the S. of W. This I believe to be the principal head of the Thomson. Here were seen the old tracks of horses (Leichhardt's camp was probably lower down on this river). We proceeded on the same course, passing betwixt two basalt ridges. I now for a short distance diverged to W.N.W., to get on a plain, when I resumed the north-west course, over two basalt ridges. The basalt was injuring our horses' feet, and I turned again W.N.W. to get on the plains. We next crossed a creek followed by a ridge. I was now able to resume the north-west course, and we hit a nice lagoon, and another head of the Thomson running south-west betwixt these two, and going N.N.W. were again the well-defined tracks of Leichhardt's party (he must have had a considerable quantity of wet weather). He had, no doubt, from Macalister's Peak perceived he was on the verge of the desert, and turned again to his old N.N.W. course. I now turned 25° N. of W. to go to a peak rising off the downs. From this peak I saw displayed before me an awful waste of endless plains. My man Patrick, who ascended the peak with me, and who is accustomed to the immense plains of the Edward and Murrumbidgee, was struck with consternation, and he remarked to me, "There is no t'other side this country." Upon leaving this solitary peak, which I have called the Sentinel, I had to turn 10° W. of N. by compass. We passed betwixt two terminations of spurs, over one ridge, to a gum-creek, running W. by N. We searched in vain for water, and had to push on over the next ridge, reaching another creek with sufficient water for a day or two. Distance, 25½ miles.

Oct. 18. Spelled at Camp 20.—I took a ride for 3 miles down the creek, which runs W.N.W. through the plains. I found another long pool of water, but fast drying up. We went to the top of the next ridge to get a good view of the range. Found I must still keep 10° W. of N. by compass. I observed a high mountain in that direction, with a remarkable gap in it. I expect to cross Leichhardt's track again to-morrow: of course whether we see it will depend upon whether he was still travelling in a rain season or not. The ground dries up here very quick. The thermometer,

from 12 to 2 P.M. was 96° in the shade; the aneroid is 29·4. By observations taken from two different stars this morning, our latitude is 21° 50′, 20 miles more north than my dead reckoning, which previously never differed from the observations more than 3 miles. We have travelled over some very good downs since leaving the sandstone. Near the ranges the grass is sufficiently thick, but as they slope down to the plain it gets thinner and thinner.

Oct. 19.—Good travelling all day. We crossed some fine downs. At the end of the first 4 miles we crossed a creek running W.S.W., and shortly afterwards another running south-west; then came to a third which ran S.S.W.; 3 miles beyond, pulled up the last of the waters of the Thomson watershed. This one was running south. We were now rising fast, and we travelled 2 miles upon a plateau of downs. Seeing the gap I have spoken of a little on my right, I altered my course from 10° W. of N. by compass to north, and on the same plateau reached it. I now turned down the opposite fall 10° W. of N. by compass, and struck a large creek running in three and sometimes more channels. This creek runs W.N.W., and is evidently the beginning of a large river. Some very high mountains are now close to us to the north. The aneroid is now 29·2, or 29·19. The gap we have crossed could have been very little under the height of the main range: where we crossed it, the aneroid stood at 28·9. Distance, 21½ miles.

Oct. 20.—Thermometer at daylight, 66°. I steered N.N.W. by compass, over fine very high basaltic downs, but thinly grassed in some places; we passed a tributary of the creek or river we camped on last night, and camped on a much larger head of the same river, which I have called the Haughton. We unfortunately disturbed three blacks, and thus failed in having an interview. They left very much worn iron tomahawks in this camp, and I have added three new ones to it. The hole here, though of great size and depth, is nearly dry. There do not appear to have been any of the heavy rains here which fell on the Victoria, as well as on the coast, in July and August. There is no appearance of spring; the carrots, instead of being green, like what they were on the Alice waters, have for the last few days been quite brown and brittle. A very high mountain, E.N.E. from the camp (No. 22), I have named Mount Gilbee, after Dr. Gilbee, who moved the resolution that I should lead this party.

Oct. 21.—Started 30° W. of N., till we crossed a tributary of the Haughton; thence to the top of a scrubby spur of the range, on which Patrick shot a turkey. I had now to turn north by compass to get out on to a plain, then N. by W. by compass, and crossed another tributary of the Haughton. Here three of the men in vain looked for water, and we had to push on over a ridge for 2½ miles. I ran down a creek W.N.W. for 4 miles, and then W. by N.

for 4 miles more, being enticed on from point to point by the appearance of the gum-trees, and the hope of finding water to bring my mare on to it. I saw it was of no use, and turned to the top of a gap in a mountain I have called Pollux; another to the east I called Castor. I had now a fine view of the country to the north, and with my glass saw gum-trees across a plain about 5 miles off. We went down the slope of the downs, and reached some splendid reaches of water, evidently the back-water of a large river. We had, however, to leave four more horses on the downs, and it was dark before we got our saddles off. The horses, parched with thirst, having had no water during a fearfully hot day, rushed into the water, packs and all; luckily no damage was done. Distance, 24½ miles.

Oct. 22.—A day's spell, as a matter of course, at Camp 23, Jingle, in collecting the horses to-day, saw the river, which he says is as big as the Dawson: we shall cross it to-morrow, and likewise another, which I think comes round a peak I saw from Mount Pollux, bearing by compass 12° E. of N. The downs here are well grassed, and if the climate is not too hot, this is as good sheep country as any in Australia. I have no doubt that permanent water is to be found near this, but that at our camp would not stand more than seven or eight months.

Oct. 23.—Went N.N.W. by compass, crossing the river, which is a sandy dry channel, 90 yards wide: this is an immense width, considering how high we are, the aneroid standing at 29·15. In about an hour, on the same course, we crossed a large tributary, two-thirds of the width of the main river, which I have named the Barkly, after the Governor of Victoria. A short distance from this brought us to the top of a basalt ridge; and as a range was now in our way, I turned 32° W. of N. to the top of another ridge, having crossed a small channel. I now turned 55° W. of N., and then due west to a small creek with two temporary water-holes and good grass. As I must cross the range, which I take to be a spur of the main range, I camped, not wishing to attempt more to-day. I hoped to cross Leichhardt's track, but we have seen no signs of it. As the Barkly is running north-west, I think it probable he followed it as long as it kept that course. I suppose this river, which I expect receives large tributaries from the north, is a principal feeder of Stuart's great lake, and that Eyre's Creek flows into it; if so, Burke must have struck it. The thermometer this morning at daylight was 64°; this evening at sundown 86°. The aneroid 29·15. Night squally, and aneroid rose to 29·25. Distance, 11½ miles.

Oct. 24.—When I got to the top of the range this morning, I found I was on an extensive basaltic tableland. The aneroid stood at 28·9. The range, with a peak which I saw from Mount Pollux, stood in the midst of this tableland. Two very high

mountains were seen about 18 miles off; one 10° E. of N., and the other 20° E. of N. The basalt was distressing to the horses, and we could not average 2 miles an hour. We were pulled up by a deep ravine with a large creek at the bottom, and lined with cliffs of basalt columns; and it was with some difficulty we found a slope of débris not too steep for our descent; and then great care had to be taken. On reaching the foot of the cliffs we ran down the creek W. by N. to a fine pool, where we camped, having been five hours doing (Distance) 6½ miles.

Oct. 25.—Made a fair start at 7·45 A.M. I followed down Jingle Creek, as I wished to clear the basaltic ranges if possible: 11½ miles in a general westerly direction, now brought us to the Barkly River, leaving which we ascended to a bit of downs. I now saw that a spur of the same basaltic ranges must make the Barkly run W.S.W.; and, as there was no help for it, I steered in that direction, crossing the river and camping at a fine pool of water, with good grass and open country—the *beau ideal* of a camp. The large tributary which I have called the Macadam, must have joined the Barkly at the back of a spur I see from here, bearing 30° S. of E. I had a view of both of them from the tableland, and then a plain separated them. We have had lots of pigeons at this camp; a lagoon about half a mile from here is reported to be permanent; I shall probably see it to-morrow. The day has been very hot, and yet not oppressively so, owing to a breeze which, although blowing from the W.S.W., was, strange to say, cool. We have generally had cool breezes from the east hitherto, at night especially. After sundown the thermometer was 100°; aneroid, 29·2. Distance, 14½ miles.

Oct. 26.—I overtook the advance party, and found them in vain endeavouring to get a parley with some gins who were crouching in the long grass on the bank of the river. I gave them some tomahawks, which gave them more confidence. One old lady who spoke a language of which Jemmy Cargara understood a little, stated that she had seen men like me many years ago down the river; pointing W.S.W., she said another river joined it from the south-east; this must be the Haughton. She also, in pointing W.S.W., repeated the words "Caree Garee" several times. I now turned north-west by compass, but the basalt again made us turn S. by W. 10°, to a fine reach of water and fine feed for the horses. I determined to spell here a day before attempting the basalt, which, *coûte qui coûte*, I must surmount if I wish to get to the north. Jingle having seen a little black boy near this, Mr. Haughton went to the camp with three of my men, and where he fell in with three black men: they had with them one of the gins to whom I had given the tomahawks; this insured a friendly reception, and they returned to my camp with Mr. Haughton. They

gave us to understand by signs, and by as much of their language as Jemmy Cargara could comprehend, that this river flowed W.S.W. by compass into Careegaree; that it was joined by another large river from the north-east. If we went north-west by compass, after crossing that river, we would go over a range and then come to a river which ran north-west into Careegaree, by which we conclude they mean the Gulf of Carpentaria; the other must be Stuart's great lake. These blacks have superior spears, thrown by a womera. One of grass-tree jointed was of immense length; another, not quite so long, had three prongs, one of which was barbed with a bit of bone fastened on with gum. Thermometer 86° at sundown; at 12 to-day it was 88°, and 100° at 2 and 3 P.M. Aneroid 29·21. Distance, 13 miles.

Oct. 27.—Spelled (it being Sunday) at Camp 27. The thermometer at 1 A.M. was at 68°; the aneroid rose to 29·25, and subsequently to 29·32, but after 12 it went down to 29·19. Yesterday evening Mr. Haughton and I ascended the range, at foot of which is this camp. We found that it was still the same tableland of basalt we have been skirting: however, by rounding this point, we get, north-west, a short piece of good ground, and then must encounter the basalt again. Day very hot. Thermometer in shade 102° at 2 P.M.; 98° at 3; at sundown, 89°. The water at this camp no doubt stands a long time, but as at present it is only 5 feet deep, it cannot be deemed permanent, notwithstanding its great length. Jingle yesterday saw some large lagoons of permanent, or, as he terms it, old water, on the south side of the river; and as there is a chain of such lagoons all along on that side under the downs, no doubt many are permanent: on this or the north side there are water-holes similar to that at this camp whenever the spurs of the basalt tableland approach the river. Jemmy Cargara, in looking for the horses this morning fell in with the blacks again, and among them was now an old man who spoke some words of his language. He said he doubted whether we should find water for the horses in the first river we had to cross. There is therefore more than one yet running into the Barkly across our course. He told Jemmy, that after crossing a river we should cross a range which came from Jemmy's country, meaning, of course, the main range. Lat. 20° 46′. 1½′ diff. from dead reckoning.

Oct. 28.—Made an excellent 7 o'clock start. After rounding the spur at No. 27, we had 1½ hour's fair riding, north-west, until we reached the top of the basalt; then over this spur, the descent and a ravine in it being so broken as to cause me to fear some accident to the horses; luckily none took place, and 2½ hours' fast riding north-west, over good undulating downs, brought us to the first river, which I have called the Dutton, after my friend Mr. Charles B. Dutton. The old black's doubts as to the water proved

correct, and as Rodney, by digging, found some within a few inches of the surface, I determined to camp and make a pool for the horses. To supply forty-eight horses was no light undertaking, but all hands worked with a will, and before sundown the horses were all satisfied, and had plenty to return to during the night. The small black ants here are such a nuisance that no one can sleep. Distance, 16 miles.

Oct. 29.—Pulled up very early at two nice pools of temporary water, with good grass, as I do not deem it prudent to pass water after the warning we have received. Distance 5 miles.

Oct. 30.—Went 30° W. of N. to a gap on a downs ridge; from thence saw a range ahead of us, and reached the summit in 7 miles, same course, having crossed two large creeks. We now travelled over this range, which was of red sandstone (of course clothed with spinifex grass), north-west, and this brought us to a fine channel of a river, where we disturbed a black digging for water. We ran this river, which I have called the Stawell, a short distance W. by N. by compass, where Rodney found a beautiful spring water-hole, where we camped. The feed for the horses is also excellent.* Thunder at night, and a few drops of rain. Distance, 14 miles.

Oct. 31.—The question now was, what water were we on, and had we crossed the main range or not? The river below our camp turned a little S. of W. We went 11½ miles west by compass, over very good downs, with a skirt of scrub on our right, and the river trees visible a long way on our left. I now turned W.S.W. by compass, for the sake of getting water, and came upon, not the Stawell,

* We had hardly unsaddled our horses, when the voices of blacks were heard. Jingle, Paddy, and Jemmy Cargara went down the river towards them, when, to their surprise, they were addressed in Yarrinaakoo, the language spoken by the blacks on the Comet, and told in angry terms to be off and not to come there. My men resented this treatment, but fearing my disapproval should they fire on them, as they wished to do, they came back and reported to me that these blacks were "coola." We now heard them shouting in all directions, very evidently collecting the others who were hunting. In the meanwhile we had our dinner. Shortly after they had collected what they deemed sufficient for their purpose, and we heard one party coming up the river, and another answering their calls from over the ridge near our camp. It was time now for us to be doing, so I directed Mr. Macalister, Mr. Haughton, Jingle, Paddy, and Coreen Jemmy to take steady horses and face the river mob, whilst Jack and Rodney, and Jemmy Cargara stopped with me to protect the camp and meet the hill party. The mounted party met about thirty men, painted and loaded with arms, and they charged them at once. Now was shown the benefit of breech-loaders, for such a continued steady fire was kept up by this small party that the enemy never was able to throw one of their formidable spears. Twelve men were killed, and few if any escaped unwounded. The hill mob probably got alarmed at the sound of the heavy firing, and did not consider it convenient to come to the scratch. The gins and children had been left camped on the river, and, as there was no water there, our possession of the spring was no doubt the *casus belli*. They might have shared it with us had they chosen to do so. This unavoidable skirmish ensured us a safe night, otherwise I think there would have been some casualty in my party before morning, as they can throw their spears 150 yards.

but a river coming from the north-east. Thunder at night, and a little rain. Distance (direct) 16½ miles.

November 1.—Spelled at Camp 31. The grass is very good here, and as we have now abundance of water we spell here to-day; to-morrow we must make another try for the main range. Yesterday evening I hit the Stawell below the junction of this, which my men have called the Woolgar River. The Stawell now runs south-west, and is evidently a large contributor to the Barkly. There must, I think, be water somewhere near this, for we saw three ducks pass in the night, and the cockatoos are numerous. The bed of the Woolgar River I measured, 111 yards from the foot of one bank to the other.

Nov. 2.—Spelled.

Nov. 3.—Spelled. At 3 P.M. thermometer 97°. Spring found down the river, latitude 20° 16. Cool night.

Nov. 4.—Still at Camp 31. Men all day in vain searching for tracks of lost mare. Saw large pools of permanent water in the Stawell.

Nov. 5.—Started an advance party N.N.W., and did not get away in pursuit of it till afternoon, and so missed it. It was dusk when we reached a tributary of the Stawell; Mr. Haughton had not, however, stopped here, and, as we could no more see the tracks, we searched for a spot to dig for water, as he had all the water-bags with him. The place we tried gave every symptom, but nothing beyond mud. There was no help for it, so having tied up the horses we tried to sleep. The night was quite cold. *Distance* (*out camp*), 18 *miles.*

Nov. 6.—Reached Camp 32, and stopped remainder of day. Mr. Haughton had got water in another tributary by digging. Some blacks had been encountered near the camp, who had attacked Paddy and Rodney, who were looking for water; one was killed by a shot from Paddy. Thermometer 104° in the shade at 3 P.M., but a cool breeze from south-west. Distance (from Camp 31), 26 miles.

Nov. 7.—Went N.N.W. by compass, over a tableland of red sandstone, after having crossed some downs near Patience Creek. I observed that rain had fallen not long ago, and the grass was green; but it made me feel very grateful when I found a small creek with abundance of good water, and fine feed for the horses. Barometer 29·11. Distance, 11 miles.

Nov. 8.—Notwithstanding the great heat, we managed to do 16 miles N.N.W. and 3 W. by N. down a creek, but no water. At first we tried to dig where we camped, but as the water came too slow, went half a mile further down, and there found a spring, which, being dug out, made a capital water-hole. Very good burnt grass

here. Is this not a tributary of the Flinders? Ground very heavy all day. Aneroid 29·25. Distance, 19 miles.

Nov. 9.—So great was the heat and so heavy the ground, that the horses were much distressed, and it was a great comfort to find some bulrushes, good springs of water, and grass, at the end of 10 miles. Our course has been, on an average, 32° N. of W., and we had crossed over to a large creek still running W.N.W.

Nov. 10.—Great delay in collecting the horses, and did not start until 10; the consequence was, that the heat and heavy ground, the latter worse than ever, nearly brought us to a stand-still. My course for first 2½ hours was N.W. by compass. I then turned 32° N. of W., when I reached a large river, with a fine pool of water 6 feet in depth. Short as the day's stage was, we were obliged to camp. (No. 36.) Distance, 10½ miles.

Nov. 11.—Started early down the river, and reached another fine pool 14 feet deep, before the heat of the day. The ground is also harder. An anabranch turned me N.W. by compass, and hit the river again about 9 miles beyond. If the ground opens, instead of being the brushy sandy country we have encountered hitherto on these waters, I intend taking advantage of the moon-light nights. Distance, 24 miles.

Nov. 12.—Ground dreadfully heavy all day. This day, I find from Mr. Haughton's report, as well as my own experience, has knocked our horses out of time altogether, so I must spell here a couple of days. Distance, 15 miles.

Nov. 13.—Spelled. The thermometer at 109° at 5 P.M. in the shade; aneroid as high as 29·51.

Nov. 14.—Spelled. Upon looking at the horses, no one would suppose they were so completely done up, for none are in bad condition; but the dreadfully heavy ground, with the heat, brings them to a stand-still at the end of 8 miles. This is a melancholy, good-for-nothing country. Aneroid, 29·50. What does this mean, for the sky is very clear, and there is a cool breeze? The nights are still delightfully cool. There are flocks of bronze-winged pigeons at this hole. Thermometer at 3 P.M., 103° in shade; at sundown, 91°; Friday morning at daybreak, 61°.

Nov. 15.—We started at 5·30 P.M., and had a pleasant ride at first over hard ground W. by S. 10°, and then W.N.W.; this brought me to a pool of water, and I camped, for although we have a splendid moon the brush is too thick to travel by night. Distance, 7 miles.

Nov. 16.—To-day reached what I supposed to be the real river, the last two camps having been, as I suspected, on an anabranch. The river turned us 32° N. of W. by compass; then a course of W.S.W. brought us to a pool where it was deemed prudent to camp.

Aneroid, 29·64; thermometer at 2 P.M., 105° in shade. Distance, 8 miles.

Nov. 17.—To-day has been more encouraging; we got an early start, and passed W. by N. over ground which was rapidly improving and getting more sound. I now turned W. by S., and was delighted to see some box-trees. The ground now is quite hard along what I take to be an anabranch; this turned us W.N.W. first, and then 6° S. of W., till the watercourse was no longer visible; still keeping the same course we crossed over to another branch. This is still too small for the main river, but my men are inclined to think it is so notwithstanding. If so, this is not the Flinders, but merely a tributary; it now turned W.N.W. and then N.N.W., which brought us to a small pool of temporary water, at which we camped. As we had a gentle breeze blowing from the gulf, the day was not unpleasantly hot. At this camp (41) is a remarkable oval ring, planted all round with tall thin saplings placed about a foot apart; none of my men understand the meaning of it. Distance, 20 miles.

Nov. 18.—Managed to make camp before the heat of the day, when we found a pool of water, and as Jingle could find none within two or three miles lower, we camped. The morning was made pleasant by the cool breeze from north-west. The river to-day has averaged a course of 48° W. of N. by compass; it has a better defined channel, and we passed one lagoon only just dried up; after all it is a mere apology for a river. The ground still continues hard, and is nearly all closed with spinifex; Jingle saw large plains when looking for water lower down; thermometer at 3 P.M., 104°; aneroid, 29·82. The pigeons, both at the last camp and at this, have been in large flocks; I was unwilling to expend powder, of which I have only three canisters left, but as I thought a change of diet beneficial, I allowed the men to shoot at this camp, and the result was we had twenty-seven pigeons. Distance, 12 miles.

Nov. 19.—Fell in to-day with some gins, who could give no information of white men, but gave us the pleasing intelligence that henceforth there was plenty of water. The country to-day is much more open, but there were no plains. Aneroid, 29·83; thermometer at 3 P.M., 103° in shade. The river is more respectable; it was joined by a creek from south-east 4 miles below Camp 42, where is an excellent pool with fish, and good burnt feed. Distance, 19½ miles.

Nov. 20.—For the first 6 miles travelled 30° W. of N. by compass; then N.N.W. for 2 miles, when we crossed the river, having to-day been on the right bank. It now for 1 mile kept the same course, N.N.W., and a plain extended along the south bank; but now it turned north by east for 3 miles, and then N.N.E. for 1 mile,

when we came to a deep permanent water-hole, and five blacks with gins and children at it. A friendly intercourse was established, and I gave them some tomahawks. They were subsequently joined by ten or twelve more men. We camped here: the blacks on one side of the water, we on the other. As this north-east turn of the river was perplexing, an endeavour was made to ascertain which way it now went. The blacks made us understand clearly enough that this river now ran N.W. by N. by compass; we understood, but not so clearly, that it joined another running more to the westward. They told us to follow this watercourse, and we should at short intervals find plenty of holes like this one. Large plains lay to the north-west, and, strange to say, they used for this the word "coonical," the same as Weerageree and Coreen Jemmy's language. They said we must avoid going west, as the country was no good, like what we had seen if we came down this river. They had heard of no white fellows being to the N.W. or W.N.W. I now suspect that what Mr. Gregory called the eastern end of the Gilbert, is the real Flinders; and this I believe to be the tributary. The country is now good, but a large proportion is subject to inundation. It is a great relief to have done with the heavy sandy country—with spinifex and brush of melaleuca, and other rubbish. Aneroid, 29·85; thermometer, at 2·30, 108° in the shade. The north-west breeze was cool this morning, but after 12 it now and then brought a hot blast from off the plains, which are visible from the back of this camp (No. 44). Distance, 13 miles.

Nov. 21.—I went the course directed by the blacks, N.W. by N., but as this brought me, after passing the flooded plains, to heavy sand, I turned off north, and found a chain of good water-holes in the river, with good grass, and there camped. My men got a few fish here, about half a pound weight each. Thermometer in shade, 108° at 3 P.M.; aneroid, 29·84. Distance, 9½ miles.

Nov. 22.—To-day I followed the course of the river, merely cutting off the bends. Great doubts are entertained as to what river this is, for if it is the Flinders, I am 20 miles out in my longitude, and the way the blacks point, it ought to take me by my map to the camp of 11th of September of Gregory; but how this can be is a puzzle, considering the width of the inundations and the abundance of permanent water. How does this correspond with Gregory's dry irregular channels? Camped at one of the finest sheets of water I have seen for many a day. Our latitude, both by observation and dead reckoning, is 18° 18′, and this corresponds with Gregory's 11th September camp, and so does my longitude. Distance, 17 miles.

Nov. 23.—We went the first hour north-west, and then north of west brought us round the end of a magnificent reach of water to some small pools to camp. In the afternoon I rode out to recon-

noitre. I saw the river was now going a little east of north, and was again in long reaches. I struck out to the west, and came on some box-flats, and on my return to camp passed a lagoon, which I had no doubt was that which Gregory passed on his way from 10th September camp to that of 11th September. My map is right after all, and this I suppose is the river marked on the maps as Bynoe. Distance uncertain.

Nov. 24.—I went out a little to the N. of W. by N., and camped on the creek on which Gregory camped 10th September. Distance, 5 miles.

Nov. 25.—This eventful day, on a course W. by S. 5°, by compass, brought us to the Flinders River. We found it a beautiful large river, with high banks, and a delicious cool breeze blowing up it. We got a good many ducks, which were very acceptable, for our meat was finished yesterday. At this camp, latitude 18° 7′, were found the well-defined trail of either three or four camels, and one horse: they had come down the Flinders. This night we had a tremendous thunder-storm; the first heavy rain we have had since starting from Bauhinian Downs. Distance, 16 miles.

Nov. 26.—I had to go up the river 8 miles before I could get a crossing-place, and last night's rain had made the ground so heavy that the horses were much distressed. I therefore camped as soon as we had crossed. This morning Jemmy Cargara, in collecting the horses, found Burke's trail returning across the plain, and going S.S.E. Grateful Creek, at Camp 33, and the three large creeks crossed upon leaving it, are evidently the heads of the Flinders, but the southerly trend which the main one took caused me to cross it. The tableland is therefore the dividing range. Distance, 8¼ miles.

Nov. 27.—We went west by compass, crossing Gregory's 8th September creek half-way. We have had plains all day, but I can see low sandstone ranges not far on our left. Night oppressive. Aneroid fell to 29·96 from 29·84. Distance, 18 miles.

Nov. 28.—Started W. by N. At first we passed over plains so full of holes as to be distressing to the horses, who were constantly stumbling. We now crossed a creek with deep holes, but now dry. Higher up, where I saw many calares and a clump of trees, I think there is water. We now began to rise, and crossed over a spur of red sandstone ranges. Crossed two dry channels, then a ridge of good downs, and finally reached one head of Morning Inlet, and camped on some lagoons. This is very good pastoral country, but I fear too hot for sheep. There is much thunder hanging about, and some storms appear to have again fallen on the Flinders, but none have reached us. A cool N N.W. breeze rendered the afternoon very pleasant, but the forenoon was very oppressive. The

immense plains which stretch away to the north and north-west, I suppose are the same mentioned by Captain Stokes. Sent a rocket up at night. Distance, 15 miles.

Nov. 29.—Expected a storm, but it passed over. Reached the main head of Morning Inlet, on a course west by north. After rising from the creek at last camp, we rode over red sandstone all day until we descended to box-flats, near the main creek: the first part box-trees, broadleaved and good grass; and the latter portion melaleuca, nearly no grass, and with innumerable cones, some 6 feet high, made by the ants. On the banks of Morning Inlet was again, where the sandstone abutted on the creek, the hateful spinifex grass. The plains are visible north of this camp (53). Cool breeze from north-west. Night very oppressive and sultry. Mosquitoes triumphant. Distance, 9 miles.

Nov. 30.—After having crossed, not far from camp, three creeks, or branches of a creek, we cleared the sandstone, and rode across a fine plain, with a small creek in the centre, and found on the west side a large creek, with two anabranches, and a fine lagoon. We now crossed a sandstone ridge, with good grass and box-trees, and reached a plain, on leaving which we had to pass over downs and stony plains, of an excellent description for pastoral purposes, to a hole in a good downs creek. I was very glad to water the horses. Another mile brought me to where Mr. Macalister had judiciously decided on camping on a creek evidently flowing into the Leichhardt, which cannot be much more than 2 miles a-head of us; indeed, I think I can see the trees of it. Distance, 17 miles.

December 1.—To-day has been an annoying day. I first went W. by N. to some sandstone cliffs, descended from them W.S.W. to a saltwater creek, which we had to run up E.S.E. for nearly 4 miles, and the last corner took us east to complete the 4 miles, so that we have come back parallel to our course. We now found some small holes of fresh water; having crossed this, we went W. by N and W.N.W., when we at last got to the Leichhardt River—the water as salt as brine. We ran it up S.S.E. by compass for 8 miles, passed by a black fishing at what looked like a ford, just above the junction with a creek, which I take to be that of Gregory's camp, 3rd September. The black never saw us. There was now a good crossing place, but as Jingle signalized there was fresh water in a creek at the back of a plain close at hand, I went to it and camped. My men shot two ducks in the river, and a couple of blacks were watching them a little lower down the river. After dinner, or a make-shift for one, my men went over towards the river in hopes of getting some ducks; but as they were crossing the plain they saw two mobs of blacks approaching. As their

appearance looked hostile, they returned to camp. Presently it was reported that they were stretching out in a half moon, in three parties. This move, which my men term "stockyarding," is peculiar to blacks throwing spears with a woomera, the object being to concentrate a shower of spears. It was one long familiar to me, and I charged their left wing. The result was that the circular line doubled up, the blacks turned and fled. Their right wing, which was the strongest, got over the river and were off; but the centre and left wing suffered a heavy loss. Distance uncertain.

Dec. 2.—Rodney found in a black's camp a sailor's jumper and an empty cognac bottle. The men (black) have all gone to the river to shoot ducks, for I cannot cross over until low water, which will be about 2 P.M. After crossing I made for Gregory's Creek, of 3rd September, and there camped, reaching it in four hours. Distance not given.

Dec. 3.—Went W.N.W. to the Albert River; found plenty of grass and the water fresh, but with a suspicion of salt; more decided when the tide rose. We had crossed an alternate succession of plains and flooded box-flats with small watercourses. Gun heard down the river at 8·7 P.M. Distance, 22 miles.

[It now appeared that Camp 57 was 8 miles only from Victoria Depôt, but having started to reconnoitre with a single attendant, Mr. Walker fell in with hostile natives, from whom he narrowly escaped, and had to camp out. The second in command had meanwhile been ordered to camp higher up, as it was not known the night before that the depôt was so near. Next morning, 5th December, they arrived safe at camp.—ED.]

Dec. 5.—Mr. Macalister had found Gregory's marked tree, and also a bottle under ground, near a tree, marked by Captain Norman, with directions to dig. The bottle contained a note, stating the depôt of the *Victoria* was about 12 miles lower down on the left bank. We now having saddled up, went up the creek until we could cross it, just above where I had slept last night. We then went N.W. by W. to Beame's Brook. Some delay took place, owing to the creek being boggy, and I was glad to camp as soon as we had crossed, for I was unwell from yesterday's anxiety and fatigue; and as Captain Norman's note is dated 29th November, there is now good hope of our meeting to-morrow. [Distance uncertain.]

Dec. 6.—Proceeded E.N.E., but had to camp, in order to make all safe for a storm. Night dismal, but the sound of a cannon within two or three miles was a comfort, and produced loud cheers. Distance, 16 miles.

Dec. 7.—In 2 miles, through a pelting hurricane of rain, reached the depôt, and I had the pleasure of shaking hands with Captain Norman.

FREDERICK WALKER,
Leader of the Expedition.*

5.—*Despatch from* Governor SIR H. BARKLY *to the Duke of Newcastle, dated* 21*st August*, 1862.

MY LORD DUKE,—

* * * * * * *

I stated when I wrote on 23rd April last, that Mr. Walker had started on 20th December from the Depôt on the Albert River, with the view of following up the tracks of Burke and his companions, which he had found on the Flinders River on his outward journey; and that Mr. Landsborough, who subsequently returned to the *Albert* from a fruitless journey to the south-west, intended to leave it about the middle of February on a similar errand, in case the first party should miss the trail.

This extra precaution was not unnecessary, for, after tracing Burke to his second or third return camp with difficulty, owing to the rains which had fallen, Mr. Walker was obliged to abandon the attempt in consequence of not finding any signs of his farther progress southwards; and, striking off towards the north-east, managed, not without many hardships and dangers from the exhaustion of his stores and loss of his horses, to reach Port Denison safely by the end of April. Mr. Landsborough, likewise, as will be seen from the narrative, failed to discover the route pursued by Burke, though he travelled up the banks of the Flinders for about 400 miles—the heavy floods which prevailed having even obliterated the recent traces of Walker and the large number of horses which he took with him. Notwithstanding this failure, however, Landsborough continued his course in a southerly direction, merely crossing the hills for about 20 miles, till he reached the source of the Thomson, a river known to flow towards the south-west, and found by him to be one of the main tributaries of the Cooper. When within about 150 miles, however, from the depôt formed by Mr. Burke prior to starting for Carpentaria, fearing for the sufficiency of his provisions, which from the first

* This paper completes the narrative of the various expeditions despatched in search of Messrs. Burke and Wills: Mr. Howitt's expedition, which rescued King, as published in Vol. XXXII. of the Society's Journal, p. 430, having for the most part traversed ground so well known as to render it unnecessary to reproduce it *in extenso*.—ED.

had been short, he turned off, and, striking the river Warrego, followed it down until he struck the Darling itself, above Fort Bourke.

By this journey, Mr. Landsborough has not only made a most important addition to our geographical knowledge, but has practically accelerated in a remarkable degree the formation of a Northern settlement.

With regard to the first, he has taught us that Sturt's Desert extends but a short distance eastwards, and that between it and the foot of the eastern chains of mountains, spreads a fine pastoral country, watered by rivers which find an outlet in lakes to the south-west; whilst, more unexpected still, the water-parting between those streams trending southward and those which flow north to the Gulf of Carpentaria, proves to be scarcely more than 20 miles in width, and may be crossed at an elevation of about a thousand feet.

As to the second point, already, stock are being driven from New South Wales to these fresh pastures, and the best-informed newspapers here predict that, before another year shall have elapsed, the whole continent east of the 140th degree will be mapped out and occupied for grazing purposes.

It may appear strange that, with large tracts within the limits of existing settlements yet but nominally stocked, the *exodus* of Tropical Australia should be so rapid; but the rainfall of the new country is believed to be heavier and more regular than on the Darling; and at the same time the Australian air is so comparatively dry, even in the Tropics, and the all-pervading forests of gum-trees so open and free from jungle, that the climate is far healthier and more endurable by European constitutions than in similar low latitudes in other portions of the globe.

Moreover, the prospect of easy access to the sea on the north coast is a great attraction to squatters; so much so, that plans for a city at the mouth of the Albert River have assumed something like a definite shape, and are encouraged, I believe, by the Queensland authorities.

6.—*Extracts of a Despatch from His Excellency* SIR GEORGE BOWEN, F.R.G.S., *to the* DUKE OF NEWCASTLE, F.R.G.S., *in reference to the Voyage of* Captain NORMAN, *and the Routes of* Mr. LANDSBOROUGH *and* Mr. WALKER, *dated Queensland, March* 15, 1862.

I HAVE the happiness to report that Her Majesty's Colonial Steamer *Victoria*, Captain Norman, anchored yesterday in Moreton Bay, on its return from the exploring expedition to the Gulf of Carpentaria.

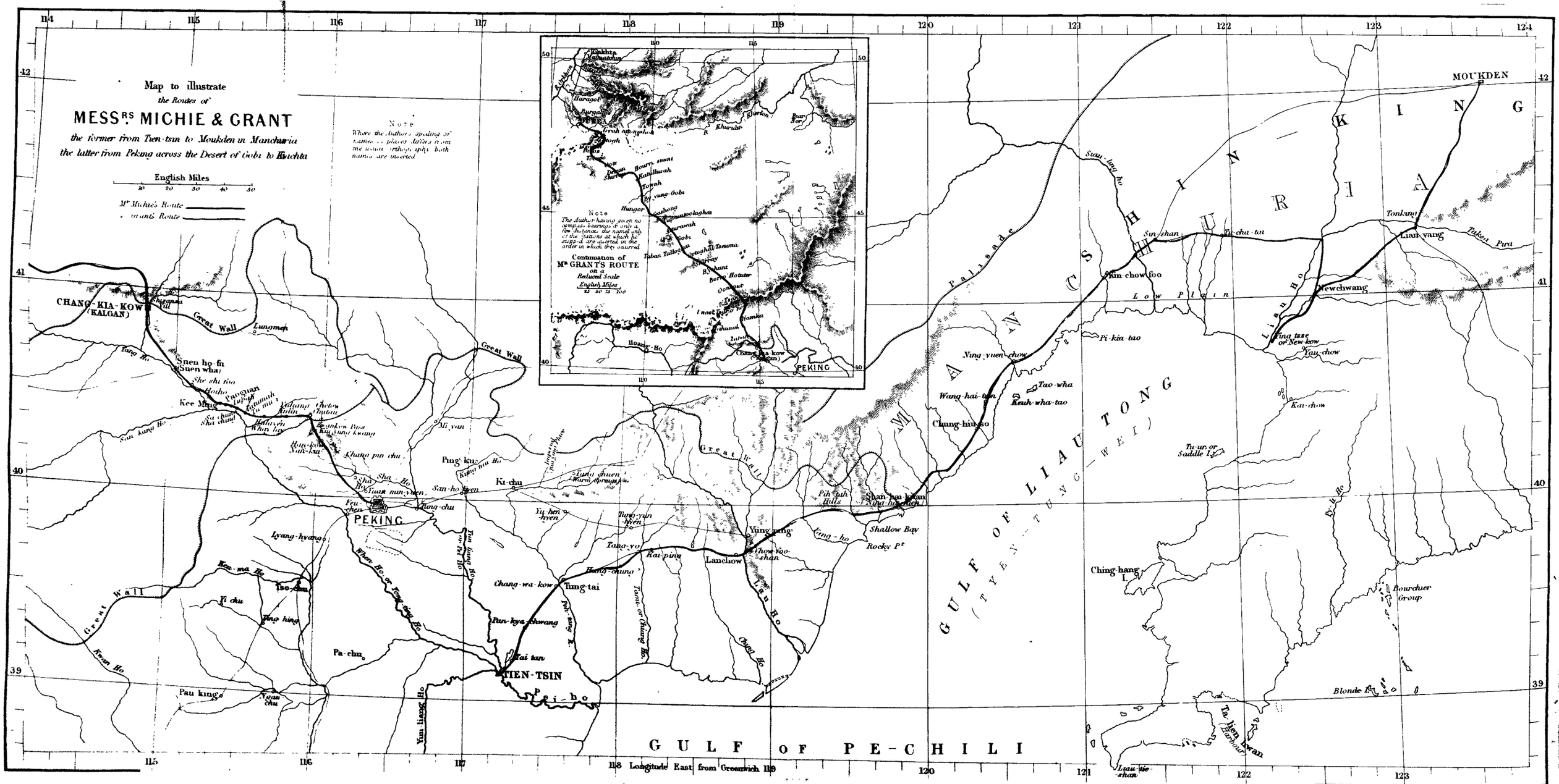
[Here follow certain details connected with the Expeditions of Messrs. Landsborough and Walker, which it is unnecessary to recapitulate after the full abstracts of their journals already given.]

Captain Norman informs me that the mouths of the Rivers Albert and Flinders, like those of most other rivers in Australia, are obstructed by bars, on which there are only 4 or 5 feet of water at low tide, with from 8 to 12 feet rise and fall. Both these rivers, however, are noble streams, navigable for above 30 miles for vessels of considerable burden. In all human probability English settlements will arise on their banks at no distant period, and will form the outlets of the rich pastoral and agricultural country of the neighbouring interior. The climate of this district, though very warm, appears to be very healthy.

Captain Norman advises me again to press on Her Majesty's Government the urgent necessity which exists, in the interests of humanity and of the general commerce of the empire at large, for the formation of a settlement at Cape York, and for the completion of the survey of the north-eastern coast of Australia by means of a small steamer. But I have addressed your Grace at length respecting these two undertakings in several previous despatches, stating at the same time how liberally the Government of Queensland is ready to contribute towards the expenses of both.

Extracts from a Despatch of SIR G. BOWEN *to the* DUKE OF NEWCASTLE, *dated 12th April*, 1862.

IT has been suggested that, inasmuch as the rainfall on the north-eastern coast of Australia occurs at a season when the territory skirting the southern portion of the Gulf of Carpentaria generally appears to suffer from drought, it is probable that a system of migratory settlement may be adopted, with advantage to the flocks and herds, which will eventually occupy both regions. A belt of table-land would seem to stretch from east to west, between the 18th and 19th parallels of south latitude, and in the mountain barrier which separates it from the plains of the seaboard, are the sources of most of the affluents of the Albert, Nicholson, Flinders, and of the other rivers flowing into the Gulf. Messrs. Burke and Wills, as well as Mr. Landsborough, crossed this table-land, and were much struck with the beauty of its landscape, the richness of its vegetation, the amenity of its climate, and the indications which it presents of the existence of mineral wealth. Although it is within the tropics, its elevation is sufficient to ensure a mild temperature; while the peculiar formation of the country, with deep basins surrounded by chains of hills, would render compara-


Map to illustrate
the Routes of
MESSRS MICHIE & GRANT
the former from Tien-tsin to Moukden in Manchuria
the latter from Peking across the Desert of Gobi to Kiachta
English Miles
10 20 30 40 50
Mr Michie's Route
Mr Grant's Route
Note
Where the Author's spelling of names of places differs from the latest orthography both names are inserted
Note
The Author having given no compass bearings & only a few distances, the names only of the stations at which he stopped are inserted in the order in which they occurred
Continuation of
Mr GRANT'S ROUTE
on a
Reduced Scale
English Miles
0 40 80 120
MOUKDEN
MANCHURIA
CHANG-KIA-KOW
(KALGAN)
Great Wall
Lungmen
Sneu ho fu
(Sneu wha)
Kee Ming
Yang Ho
Sha Ho
Khang pin chu
Pung ku
Ki chu
Mi yan
Great Wall
PEKING
Yung tung
Lanchow
Tung tai
Chang wa kow
Pan kya chwang
Tai tan
TIEN-TSIN
Pei ho
Pa chu
Pau kung
Yen liang Ho
Kwan Ho
Yi chu
Ping hing
Lyang kyang
Tso chu
Wang hai tun
Ning yuen chow
Tao wha
Keuh wha tao
Chung hing so
Pi kia tao
Kin chow foo
Liau Ho
Newchwang
Liang tsze
or New kow
Yau chow
Kai chow
Tu un or
Saddle I.
Shan hai kwan
Ning hai chen
Pih tah
Hills
Shallow Bay
Rocky Pt
Ching hang
I.
Bourchier
Group
Blonde R.
Ta lien hwan
(Harbour)
Liau tie
shan
Tonkang
Liang yang
Taban Pira
Stan lung ho
Palisade
Low Plain
GULF OF LIAU TONG
(TYEN-TUNG-WEI)
GULF OF PE-CHILI
Longitude East from Greenwich
Pub.d for the Journal of the Royal Geographical Society by John Murray Albemarle St.t Lon. in 18
Edw.d Weller

tively easy the construction of reservoirs to hold the great annual fall of rain. On the whole, this region holds out the promise of being, ere long, overspread by that tide of population which is gradually creeping up the eastern seaboard of Queensland, and which will naturally flow round towards the Gulf, when it reaches the York Peninsula.

The projected establishment of a settlement at Cape York, and the proposed temporary annexation to Queensland of the territory sketched above, will vastly accelerate its colonization, by securing to the intending settlers the advantages of certain communication, of armed protection, and of regular civil government.

III.—*Narrative of a Journey from Tientsin to Moukden in Manchuria in July*, 1861. By A. MICHIE, Esq., F.R.G.S.

Read, December 8, 1862.

July 6.—Leaving Tientsin and crossing the Pei-ho, the first stage of our journey led through a belt of well-watered ground, bearing thriving crops of millet, beans, and hemp. The road was good; and the tall millet on either side kept off the wind and the dust which is the curse of these plains.

July 7.—Our second stage led us through a bleak country, with poor thin crops, and almost without inhabitants. The people who live in the few scattered villages we saw were evidently pinched for water, for we noticed numerous wells dug by the road-side, all of which were dry.

The country improved as we approached the Peh-tang river, and we found ourselves crossing another belt of well-cultivated ground, watered by canals from the river. We were ferried across the river at a place called Chang-wa-kow, 45 miles by the road from Tientsin and 40 in a direct line from the sea.

Beyond the Peh-tang, the country is still more fertile, villages becoming numerous.

July 8.—Our route now took a more easterly direction. From Fung-tai we proceeded by very bad roads, 60 li, to Hang-chung, a small village apparently off the main road. Here we got ice for the first and last time after leaving Tientsin. The country continues fertile with a good deal of wood.

From Hang-chung we proceeded towards Kai-ping (see map); country well wooded, and the road leading through long avenues of fine old willow-trees. Vines and fruit-trees were also seen to-day, and we observed a good deal of indigo and tobacco under cultivation.

Forded the Taou river at the town of Tang-yo, where there

are large potteries. Lime is burnt here, and coal is found in the neighbourhood.

We halted at Kai-ping, which is a walled town of some pretensions. The inhabitants of Kai-ping and of the villages passed on this day's journey seem to be in comparatively easy circumstances. Instead of the mud hovels that wearied the eye on the bleak country west of the Peh-tang, we saw neat brick-built cottages with little flower-gardens attached, with various other evidences of comfort and good taste. The population is much denser, and the necessaries of life more easily accessible.

July 9.—Between Kai-ping and Lan-chow the country is divided into long narrow strips by hedgerows, evidently to protect the fields from sand-drift, and judging from the quantities of loose sand accumulated in ridges along these fences, they appear to answer their purpose well. These hedgerows all run north and south, at right angles with the extensive sand-hills on the coast to the eastward, and it is not improbable the sand-drift comes from that quarter.

In a small town passed through on this day's march, a fair was going on. The street was densely crowded with stalls containing all kinds of agricultural produce, cloth, implements, &c., from all parts of the surrounding country. In this manner is the trade, such as it is, carried on in these thinly-peopled regions; and hence the appearance of the shops is no criterion by which to compare the wealth or prosperity of these parts with that of the more populous portions of China.

In the afternoon we passed through *Lan-chow*, and a mile beyond we were ferried across the Lan-ho, a broad but shallow river. This river may, in former times, have been more navigable than it is now. The height of the banks above the present water-level is sufficient to admit of this; and it is worthy of notice that, in one of the celebrated remonstrances against the flight of the Emperor from Pekin, Kia-ching, Secretary of State, says that, "Since the Barbarians have been able to reach Tientsin, what is there to prevent them from likewise penetrating to the Lan River (at Zeol)?"

This river flows through a valley which opens out an extensive view through the mountain-ranges on the north. The pagoda of Lanchow conspicuous on an isolated hill, the broad river and the luxuriant verdure of its banks, the undulating and well-wooded country round, and the vista through which the distant mountain-ranges appear, made this the finest bit of mere scenery on the journey.

July 10.—At midday we halted at Chow-foo-shan, a small village at the foot of some hills of that name. Beyond this point our route turned more northerly. We had somehow missed the

main road, and instead of passing through Yung-ping as intended, our route must have lain 5 or 6 miles south of it.

July 11.—We halted on the banks of the Yang-ho. It had rained in torrents all night, and yesterday there had also been heavy showers. Consequently the Yang-ho, which is in general easily fordable, was flooded. A small boat which seemed to be there by accident carried us across, and our animals had to swim.

After travelling about 10 miles further in a north-easterly direction through an undulating country, some sand-hills on our right and a bluff rocky point 6 or 8 miles south-easterly from us, indicated our vicinity to the sea, and on gaining an eminence the sea was full in view. We were passing the head of a wide bay with a long sandy beach on which the surf was breaking heavily.

Descending from this elevation, our route lay through a dreary plain of soft heavy sand, intersected by one or two small streams. The limit of cultivation was a mile or two inland of us—the coast-line about 3 miles distant. Our front view was bounded by a high and precipitous range of hills, which we knew must be those at the terminus of the Great Wall. We crossed the sand in two hours, and re-entered a strip of cultivation, feeling great relief in emerging from a desert into a region of life.

We soon came in view of the Great Wall of China, and traced it from the mountain-ridge down to the plain. The description given by the gentlemen of Lord Macartney's embassy of the first appearance of another part of the Wall is very accurate, and is equally applicable to this:—"On the first distant approach it resembles a prominent vein or ridge of quartz standing out from mountains of gneiss or granite." We did not reach the Wall till dark; the road leading for upwards of a mile through a level plain strewn with round pebbles.

The pass through the Great Wall has always been jealously guarded by the Government. A small walled city, called *Shan-hai-kwan*, or "Mountain-Sea-barrier," is built round the gate, the Great Wall itself forming one wall of the city. This city is also called *Ning-hai-hien*. It is a square, with two streets intersecting each other in the centre, where they are surmounted by a double arch with a tower over it. There is also a tower over each of the gates which are three in number, the gate in the Great Wall forming, as it were, the fourth gate of the city. The walls as well as the gates are substantially built, and the latter are protected by outworks of mud, apparently new. Great numbers of empty soldiers' huts were seen outside of the city, but no troops were seen excepting the few men in the guard-house. There was a good deal of animation in the city, but it seemed to partake more of an official than a mercantile character. Shan-hai-kwan is in fact little

more than a military station and a custom-house, and as the high-road from Pekin to Moukden passes through the Great Wall at this point, it is a most eligible locality for these official establishments.

We here for the first time encountered the Mandarins, who seemed disconcerted at the presence of foreigners at the Great Wall, and, for want of a "precedent," in doubt as to the reception we ought to have. The production of our passports, as also of a special "chop" from the Commissioner of Customs at Tientsin, decided this matter; and the Mandarins thenceforth affected great anxiety to serve us. A room was provided for us in an out-building in the court-yard of the principal hotel in the place, the most comfortless quarters we had seen. The court-yard was immediately filled with noisy crowds—respectful enough at first, afterwards familiar; and on the following day intolerably rude, forcing themselves into our small close room until we were nearly suffocated. And to make matters worse, my travelling companion was ill from the effects of a sun-stroke. We appealed to the Mandarins, but they were powerless or unwilling to control the mob. We were thus obliged to take the law into our own hands, which was eminently effective.

Shan-hai-kwan is in a plain 3 or 4 miles from the sea on one side and from the mountains on the other. The Great Wall runs through the plain, and is carried over the boldest ridges of the mountains. Their highest elevation immediately in rear of the city is less than 1600 feet above the plain; but the mountains increase in height as they recede from the sea, and we could trace the towers of the Great Wall on the distant ridges at an elevation of probably not less than 4000 feet. The very rugged character of these mountains evidences an amount of energy in the construction of the Wall, not to be found in the present race of Chinese. Advantage has of course been taken of the materials nearest at hand, the Wall being built chiefly of stone on the heights, and of brick on the plain.

The Wall is not uniform either in height, breadth, or construction; and in the few miles which we had an opportunity of inspecting, we saw enough to account for the discrepancies in the various estimates of the dimensions of the Wall. Square towers or bastions are placed at short but irregular intervals, about six or eight to a mile. About the city the Wall is in good repair; but a short distance on the west side there is a wide breach, apparently undermined by a small stream which runs through it. Here we could see lumps of brick and mortar that had tumbled down in great solid masses. The terminus of the wall which we visited a month later, through the kindness of Lord John Hay and the

officers of H.M.S. *Odin*, is in a ruinous state. The remains of a fort called Tien-mun-kwan are there, but no guard is kept up, and we walked some distance on the Wall without a challenge.

Time has certainly dealt tenderly with the Great Wall; for, allowing for extensive repairs made at various times, it cannot be doubted that a large portion of the original structure is still intact. The mortar is of a most tenacious character, and is as hard as the bricks. The bricks are very large, and of a coarser-grained and more gravelly material than those of modern manufacture.

July 13.—Leaving this monument of twenty centuries, we resumed our journey, much to the relief of our Mandarin friends, who, however, sent a horseman to accompany us the first stage to see that no evil should befal us.

The frontier of Manchuria is marked by a square tower on a rising ground, about 2 miles from Shan-hai-kwan. The road runs nearly parallel to the coast-line, and for one day's journey the sea continues in sight. The various mountain-ranges from west and north terminate abruptly in a point at Shan-hai-kwan, receding gradually from our track as we travel to the north-east.

There is less cultivation on the Manchu side of the Great Wall, and fewer villages to be seen along the road. Cattle, sheep, and goats now appear in greater numbers browsing on the scant pastures of the hill-sides.

From the Great Wall a succession of towers, evidently very old, is visible at irregular intervals of from 2 to 5 miles, lining the main road. This series is intersected by lines of similar towers leading towards the mountains. These towers are all built on high ground, and, so far as we could observe, those on our line of road always command a view of the sea.

We halted for the night at Chung-hiu-so, 120 li from Shan-hai-kwan, the largest walled town since leaving Tientsin.

July 14.—Did a "sabbath-day's journey" of 45 li to Wang-hai-tien. It is pleasantly situated on an elevation, and commands a view of a fine harbour, where fleets of junks were lying at anchor wind-bound, being protected to seaward by a lofty island.

July 15.—The road now recedes more from the coast-line which is only now and then visible from an eminence. Past Ning-yuen-chow.

July 16.—Kin-chow-foo being the second departmental city in Shin-king, we resolved to visit it, although some miles out of our direct road. This is a great breeding country, and live stock constitutes its principal wealth.

More traffic was noticed on the road these last two days than heretofore, but still far less than we expected to find on the main road between Moukden and Pekin.

Kin-chow disappointed us by its small size. It is a square, as all Manchu cities seem to be, the wall being about half a mile each way. The streets in the city are wide and clean, but those in the small suburb are very filthy. Little trade or activity of any kind was observable. It is about 15 miles from the sea.

July 17.—Crossing a ridge, we pass through the town Sin-shan-shan, about 2 miles from a hill of the same name. This hill is a conspicuous object from its situation and remarkable appearance, being very precipitous and consisting of several craggy peaks. It is well detached from the high land on the north, and overlooks the great plain on the south and east. It is an excellent land-mark, being situated in the bifurcation of the main road on which we had been travelling; one branch of the road leading on the left of the hill to Moukden, and the other on the right to Newchwang.

From an elevated ridge above the town we obtained an extensive view of the country before us. On our left the mountain ranges, that had kept us company so long, trended away to the north and north-east. On our right and front was a vast plain, spread out like an ocean without a shore, over which we had to pass. The prospect was a dreary one, and, having visited the eastern part of this plain in 1859, I had been looking forward with a degree of horror to this part of our journey. The face of the country is so low that, at a distance of from 30 to 50 miles from the sea, nothing but sea-birds can live on it. It is a mere mud-flat, barely above the sea-level, with every appearance of being periodically flooded. The road is, for the most part, a mere track, hardly distinguishable from the rest of the flat. In some parts we found it so wet that our baggage was pulled through with difficulty, and in heavy rains it must be impassable. The road from Sin-san-shan to Newchwang is very circuitous, and seems to hug the verge of the desert as closely as possible. A direct line is evidently deemed impracticable, from the softness of the mud and the want of fresh water.

Our first day's journey through this plain was the worst. On our left were occasional strips of cultivation, and herds of cattle and horses were spread over other parts, where a coarse vegetation afforded them a subsistence. Human habitations were few and far between. Villages composed of a few mud hovels were scarcely visible from each other, although there was nothing else to break the monotony of the plain. The people are necessarily very poor.

The water is quite brackish. Where the mud is dry it is smooth and caked on the surface, as if it had been recently flooded, and then sun-hardened. The surface has a whitish appearance, from the salt particles that have been left after evaporation. The edges

of pools and streamlets are also whitened. I may here remark also that the low land near the mouth of the Pei-ho river presents almost the same appearance.

At the end of the day we reached Tu-cha-tai, where we found better accommodation than we could have expected. Day's journey 100 li.

July 18.—We had hardly got clear of Tu-cha-tai when our baggage-cart got wrecked in the deep heavy mud, and but for the cheerful assistance of the villagers it might have been there to this day. After that, the road improved very much, and our progress was rapid. Cultivation became more general, and we passed through large tracts of rich meadow-land where haymaking was going on. The hay is of excellent quality, and its sweet smell reminded us of mowing-time at home. Live stock is the main resource of the people, and they have a large and fine breed of cattle. We were induced to pull up at a large farm and ask for some milk. Our request seemed rather incomprehensible to the good people, as they never use milk themselves; but they brought us some cows and made us welcome to all we could get from them.

In the afternoon we reached the Liau-ho, at the confluence of two branches. Numerous small craft were passing up and down, and several sea-going junks were lying at anchor. We were now 75 miles by the river from Ying-tsze (or New-kow), the newly-opened port of Newchwang at the mouth of the river, but, no boat being immediately available to take us there, we ferried across and proceeded towards Newchwang, some 8 miles from the river.

A very marked improvement in the aspect of the country was now observable. Extensive fields of millet, beans, and such-like crops, in a highly flourishing condition, and a well-wooded country, afforded a pleasing contrast to the inhospitable region we had so lately quitted.

The town of Newchwang is 30 miles from the sea. It has been an important place, and is still the resort of many of the wealthier people. The streets are very wide, but irregularly laid out; the houses are neat and tasteful. The remains of an old wall may be discovered by looking for it. A branch of the Liau-ho, with some good bridges over it, runs past the city. This river is a mere streamlet now, but the old stone bridges were not erected for nothing, and there must have been water in the river at some former period.

We were most unpleasantly mobbed here, and as none of the innkeepers would receive us we had to take the road again, ourselves and our animals unfed, after a hard ride of 45 miles, until we found a resting-place at a small road-side inn 3 miles on the road to Ying-tsze.

July 19.—We hurried on to Ying-tsze, where we arrived at noon, and were welcomed by the few foreigners who had lately settled there.

The same evening we felt a shock of earthquake—a short, sharp vibration.

A British Consulate had been established in Ying-tsze for about two months, and a few merchants were settled, but the trade of the port was of very limited extent as yet.

July 24.—After resting for four days in Ying-tsze we set out for Moukden, the capital of Manchuria, and the seat of the reigning dynasty. The journey being short, we left our baggage-cart behind, putting a few necessaries on the back of a pony. This mode of travelling we found more expeditious, as it rendered us comparatively independent of the condition of the roads.

The sharp remonstrance of our Consul, Mr. Meadows, on the subject of our treatment at Newchwang procured us great civility on our second visit to that place; but, not caring to trust to its hospitality, we passed it, and halted at a small inn 110 li from Ying-tsze.

July 25.—We perceptibly approach the high land, and at midday we rested at the foot of an outlying spur called An-shan, 500 or 600 feet high. The crops were in fine order, millet standing 10 feet high. The lilac flower of the beans and the yellow of the hemp contrasted pleasingly with the various shades of green. Wood is abundant in the low ground, chiefly willow, but interspersed with a few elms and other trees.

Halted at Liau-yang, having travelled 110 li.

Liau-yang is an old walled town; the walls, which are between half and three-quarters of a mile square, facing the cardinal points, as in all Tartar cities. The suburb appears to have been also at one time enclosed by a mud wall, the remains of which are in some places traceable. The streets are wide, regular, and neat. Considerable activity prevails here in various branches of industry, particularly in wood-work. Coffins, in great variety of styles, form conspicuous object in the shops.

At Liau-yang we enter the high road from Corea, by which the Coreans travel on their periodical missions to Moukden and Pekin. One of the gates of the city is named after the Coreans.

The roads to-day were so bad that a cart could not have proceeded, and we had to pick our way carefully on horseback. Where the road is carried through deep soil it forms an excavation for itself, often 10 or 12 feet below the level of the fields. In heavy rains this fills with water, which has no means of running off, and the road becomes a canal.

July 27.—On the approach to Moukden the first object that attracts attention is a remarkable Buddhist monument beside a

Llama temple, on the right of the road. On the opposite side is a large park of fine grass, deeply shaded by willow-trees. The city-wall now comes in sight with its towers; but first we pass through an extensive burying-ground, well tenanted, to judge by the number of tomb-stones in it. We then reach a low mud-wall, which encloses the four suburbs of Moukden. This wall would hardly be distinguishable from an ordinary country fence, but for the wooden gate and guard-house, which it is necessary to pass through.

Moukden is so different from any Chinese city I have seen, that it is difficult to draw a comparison. The first thing that strikes a visitor is the massive solidity and height of the walls, and the absence of a moat. The walls are about 40 feet high, and, in addition to the usual embrasures, the upper part of the wall, which overhangs slightly beyond the perpendicular, is perforated obliquely with loop-holes, for the evident purpose of throwing a vertical fire on an assailant at close quarters. The city has eight gates, each being surmounted by a tower, as in Pekin. Similar towers are also placed over the four corners of the walls, as also over the intersections of the streets. The city, and everything about it, is laid out with mathematical accuracy, and its aspect of order and neatness, the solidity and tastefulness of all its buildings, its freedom from everything offensive, and the air of prosperity that pervades all its inhabitants, do infinite credit to the earlier Manchu emperors, who took such pride and pains in improving and beautifying their old capital.

The suburbs are mostly vacant ground, the only buildings being the continuations of the four main streets running through the inner city. I estimate the circuit of the inner wall at about 3 miles, the outer about 10.

On leaving Ying-tsze a merchant volunteered a letter of credit on his friend in Moukden for a thousand dollars, an amount we had no means of investing; but we, nevertheless, sought out the party to whom we were accredited, and found him very useful and attentive during our stay in Moukden. Under his guidance we endeavoured to see the interior of the palace, but failed, the old wooden gate being tied up with a bit of string on our approach. Being the first *bonâ fide* foreign visitors to Moukden, we deemed it proper not to make ourselves disagreeable by forcing an entrance; for, after all, it is private property, and the officials were otherwise very friendly and civil to us. Considering its age, the palace is in good repair externally; but we were given to understand that the annual vote for keeping it in order is sadly misappropriated, and the keepers were probably ashamed to show us the interior.

The next building in importance is the Government offices, or Yamun; and the most notable objects here were lines of mule-carts

harnessed, and troops of ponies saddled and bridled in the court-yard. In the street outside there was also a row of carts harnessed and for hire. All these looked well: the wood-work of the carts well oiled or varnished, harness well blacked, and saddlery and everything else in the best order. The military also were well got up, and are all fine men.

Although Moukden is held in high repute all over the north, it comes far short of even second-rate cities in central China in point of size, population, or mercantile activity. It is after all the capital of a very thinly-peopled country, in which, by the force of circumstances, agriculture plays a more important part than commerce. The want of good water-communication and the very defective means of conveyance are the main obstacles to the development of trade in Manchuria. Moukden excels all other Chinese towns in the elegance and order of its buildings, the quiet respectability of its inhabitants, its freedom from filth, squalor, and beggary, and general prosperity without opulence. I might call it the Edinburgh of the north, and Tientsin would thus stand for Glasgow, while Soochow, Hangchow, or Canton would fitly represent London.

The industry of Moukden is employed much more in articles of use than ornament. Saddlery, cart-building, the manufacture of bows and arrows, guns and matchlocks, swords, and ironwork in great variety, are brought to as high degree of perfection as the Chinese are capable of.

Our native friend was as much interested in us as we were in him, and questioned us closely on sundry geographical matters. He inquired particularly about Japan, Loochoo, and *Wads'* or *Awadsu*, as three neighbouring countries to China. I have since found—what our friend seemed not to be aware of—that Awadsu is an old name for Japan, taken from the island of that name near Osaca.

We gathered from our friend that the politico-commercial mission from Corea to Moukden and Pekin occurs three times a year, in the third, fourth, and ninth moons. On these occasions the gate in the palisade separating Manchuria from Corea at Fung-whang-tuka, near the southern extremity of the palisade, is opened to admit the Coreans with their merchandise. No Chinese are allowed to enter Corea by this gate; but whether this is a restriction of the Chinese or Corean government, our ignorance of the language prevented us from ascertaining. The distance by the road from Moukden to Fung-whang was stated to be 600 li. The most valuable commodities imported by the Coreans are gold dust and ginseng. The gold is melted and refined in the Peh-kwan, or northern suburb of Moukden, which is the great resort of traders; and the ginseng is distributed from Moukden to every corner of

China. The finest qualities of ginseng are highly prized by the Chinese and fetch enormous prices, sometimes as much as the equivalent of ten guineas an ounce.

The burial-place of the Manchu family is said to be situated in the mountains, about 60 miles east of Moukden; but no one seemed able to comprehend our desire to get there or willing to assist us in accomplishing our object. We therefore abandoned the idea of further exploration, our time being limited, and returned by forced marches to Ying-tsze, whence we got a passage to Tientsin, in the *Odin*, touching at the terminus of the Great Wall.

And now, leaving my diary, I will conclude this paper by some general observations; confining myself as much as possible to my actual experience, and stating facts rather than drawing inferences.

1. First, as to the elevation of the land. I have alluded to the constant occurrence of dry beds of streams, which have all the appearance of having once been filled with water to a height of 6 to 10 feet above the present water-level, and which now even in the rainy season are barely wet. I cannot help connecting this circumstance with precisely similar phenomena I have observed in the province of Shantung, on the opposite shore of the gulf of Pecheli. I find also from the journal of an officer who travelled from Tientsin to Chefoo, that the same thing is noted in that quarter; so that the whole coast of the gulfs of Pecheli and Liau-tung, covering a space of over 200 miles from north to south and nearly 300 from east to west, is cut up by dry beds of water-courses, many of them in the vicinity of mountains being strewn with smooth round pebbles.

Then the two great alluvial plains, which for convenience I may call the valleys of the Pei-ho and Liau-ho, present every appearance to the casual observer of having been very recently under water. I say nothing of the tract of country extending from the Pei-ho southward and eastward to the mountainous coast of Shantung, not having myself visited that part. But the mud flat—in the neighbourhood of Taku, at the mouth of the Pei-ho, extending from the coast-line several miles inland to the limit of the cultivated ground, and barely elevated above the sea-level—is barren and marshy; the water is brackish, and the smooth surface, which is caked and cracked by the sun, is covered with a thin scurf of salt. These characteristics are perhaps more strongly marked in the northern valley, extending northward and westward from Newchwang. Our route here, as I have said, skirted the desert. The soil was barren, the surface caked, and only a little thinly-scattered coarse vegetation here and there supported a few horses and cattle. The margins of pools and water-courses were whitened with salt, and between Ying-tsze and the coast the whole surface has this white appearance in dry weather.

In connection with this subject I would also mention that we were informed at Ying-tsze that the town of Newchwang was in former times the sea-port, that subsequently it had been abandoned for Tai-tsze, a town some 20 miles nearer the mouth of the river, and that within the present century Tai-tsze was in turn abandoned, in consequence of the shoaling of the water, and Ying-tsze established as the sea-port, as near the mouth of the river as soil could be found sufficiently firm to support buildings.

The numerous shoals on both sides of the mouth of the Liau-ho, extending many miles to seaward, point to the formation of a delta like that of the Yang-tsze-kiang, which will at no distant date reclaim a large tract of land from the sea.

2. The climate of these regions is pre-eminently *dry*. The rains fall chiefly in summer, in the shape of heavy thunder-showers of short duration, after which the ground dries again in a very short time. The air is always pure and bracing; and even during rain the atmosphere has none of that oppressiveness which makes the low country in the valley of the Yang-tsze-kiang so unhealthy in summer. The summer heat is very great but of short continuance, and the winter is rigorous in the extreme. Comparatively little snow falls, and the roads are seldom or never impassable in winter. All animals are well covered with hair in winter, pigs being clothed in a kind of wool. As late as July in the most northerly part of our journey we observed dogs and other animals with fragments of their winter coats still hanging from them in thick matted lumps.

3. The *people* are tall, strong, and robust—the result, doubtless, of a salubrious climate, combined with a rough Spartan mode of life. These qualities become more apparent as we advance into Manchuria. The country is poor and thinly peopled, towns small and far apart, and the means of conveyance very limited, owing to the absence of water-communication. Hence the people, although all Chinese or the descendants of Chinese settlers adapting themselves to circumstances, have in some measure been imbued with the nomadic habits of the Tartars. In the seaport towns and in Moukden the inhabitants are, of course, more refined; but even there, luxuries are unknown which are easily within the reach of three-fourths of the population of the rich commercial districts of China. A corpulent Cantonese once told me that he had travelled all over the province of Shin-king and could get nothing to eat!

In the memorials addressed to the Emperor Hien-fung in 1860, to dissuade him from travelling into Tartary, frequent allusions are made to robberies beyond the Great Wall. Whether this is a bugbear or not, travellers are always prepared for an encounter, and when going on long journeys they travel in caravans, often engaging the services of an armed escort. A particular class of

the people make this work their business, and when unemployed are probably themselves the most expert highwaymen. I take it the employment of these men as escorts is a kind of black mail, which merchants and travellers pay for their security.

The women nearly all wear large, that is, natural feet; the small cramped ones being only seen in or near the larger towns. The country women are, in fact, out of the fashion. The women are not kept in seclusion, but perform long journeys on horseback; and we always found the female population come out and stare at us when passing through towns.

The prevalence of brown hair among these people attracted our attention; and we observed eyes of all shades, from brown to light grey, but none with any tendency to *blue*.

I was surprised to find so few Tartars in our travels. The old Manchus have lost ground in their own country entirely, and have either been driven back by the force of a superior civilization into the wild pasture-lands of Manchuria, or have been absorbed and lost in the dominant and more enterprising race. The few that are left are Chinese in language, manners, and customs; and it is not always easy even for a Chinese to distinguish them, more especially since the Tartars have begun to intermarry with the Chinese, the Tartar husband adopting, by custom, the Chinese name of his wife. There is no good feeling between the two races. The Tartars hate and fear the Chinese, and the Chinese hate and despise the Tartars. The Chinese say the Tartars were insolent in their day of power; but now that the fortunes of the Manchu emperors are on the wane, they are anxious to conciliate the Chinese in view of the possible contingency of another dynasty rising shortly on the ruins of the Manchus.

4. *Trade* is restricted as much by the cost and difficulty of carriage as by the poverty of the country and paucity of inhabitants. The only navigable stream on the Manchu coast is the Liau-ho, and that is only partially available from its having no navigable tributaries. The comparative disadvantages under which inland trade in the north is carried on may be seen from the fact that in the populous part of the valley of the Yang-tsze-kiang, where every farm has its canal, a boy with a small boat, costing a few dollars, can do the work of a man with a cart and six horses in Manchuria. The boat is started with a capital of not more than one-tenth of the other; it has little or no wear and tear, and wants no feeding. The cost of conveyance in the north is materially enhanced by the wretched condition of the roads. These roads seem to be much in the condition of roads in Scotland as lately as 60 or 70 years ago, when the mails were carried by a horse-cart, doing a bare 30 miles a-day. They are never made, but left to chance. The carts have often to struggle through mire up to the axle-trees, and ascend

rocky acclivities that tax the whole power of the animals. With good well-kept roads two horses or mules would probably do the work that requires four or six now. In winter, however, the roads are better, that is, drier, and winter accordingly is the season of most traffic. The men and horses that are employed in agriculture during summer are employed in winter in conveying the produce they have raised, for sale at the various depôts.

The material wealth of that part of the country is represented by its grain crops; its mineral products, such as coal, are made little of. The export of pulse is the basis of the trade. Specie is used sparingly, the bulk of the imports of native produce, as well as foreign manufactures being taken in payment for pulse. The surplus produce of peas, beans, and such like is very large, and has employed in its conveyance seaward a large fleet of native craft, and now of foreign vessels also; but in money value it amounts to little. No statistics of this trade are yet obtainable.

5. The *food* of the people is simple, being limited for the most part to the produce of their own land: pork, salt-fish, fowls, ducks, millet and maize, wheaten bread, vegetables, and a little rice. Their sheep and cattle are not killed till the pastures are exhausted in the autumn, when they are slaughtered in great numbers and laid up for winter consumption. Their pigs are killed for immediate wants all the year round; but in the early winter whole herds are killed and salted.

6. The strong military government of Manchuria, which has been so much talked of, is almost a myth. Excepting in Moukden and at the Great Wall, it has left no mark. Everywhere else government is weak. The fact of the existence of a kind of local militia at Newchwang (and no doubt elsewhere) who act as a "vigilance committee," and deal substantial justice according to the light that is given them and independently of the Mandarins, shows the inefficiency of the so-called military government. The explanation of this seems to be that there is not sufficient wealth in the country to make it a desirable field for a set of rapacious Mandarins.

7. It would have been interesting, had time permitted, to have followed up the Liau-ho and ascertained the actual extent of the water-communication northward. In the maps the Liau-ho and its tributaries are traceable to a point only a few miles distant from the head-waters of the Songari, the main tributary of the Amoor. But the navigable portion, even for the smallest sized boats, would probably be found to fall far short of this; for the old maps show many considerable streams in the part of the country traversed by us, which we found almost dry and easily fordable.

IV.—*Journey from Pekin to St. Petersburg, across the Desert of Gobi.* By C. M. Grant, Esq.

Read, December 8, 1862.

Towards the close of my stay in China in 1861, I passed several months at Tientsin, after the ratification of the Treaty, and while awaiting the issue of passports for the interior, I made a trip to the Great Wall, in the direction of Manchuria, and followed its course for about 40 miles. In this quarter, it is built of brick, having a granite foundation. I measured it several times, and found it always to be the same width, about 15 feet. I passed through numerous large towns, and found a warm mineral spring at a place called Tang-chuen, situated at the foot of a hill over which the Great Wall passes. This is a resort of persons suffering from cutaneous diseases, who bathe here. The heat of the water is about 100° Fahrenheit. The spring is within the precincts of a Buddhist temple, and a set of baths of various dimensions have been built round it. From thence I went to visit the Imperial Burying-ground of the present dynasty, near a town called Malaboo; but, on presenting myself at the gates, I was told that I could not be allowed permission to enter. Upon this, I went to the chief Mandarin, to pay my visit and to ask leave to see the country, but, after a complimentary visit to that dignitary, was unable to obtain permission. My readiness to accept his explanations had, however, put him in such good humour, that he despatched a very handsomely worded letter to Prince Kung respecting my conduct, of which a copy was sent me.

Immediately after the receipt of this, I made application for a passport for Mongolia. It was at first refused, on the ground that the Mongols were not all thoroughly subdued. However, I was prepared to take all risks on myself, and at the end of three weeks, thanks to the perseverance of Mr. Bruce, I was provided at Pekin with a Chinese passport, bearing the Imperial "chop," and an English passport for Russia, visé by the Russian Minister.

Through the kindness of one of the members of Her Majesty's Legation I was enabled to procure two baggage-carts and two mule-chairs.*

* The latter is an oblong vehicle, 6 to 7 feet in length, and 3 feet high. There are windows of cotton on each side, and the door is in front. After having carefully arranged his bed, the traveller enters and places himself in a reclining position; the machine is then raised by means of two strong wooden or bamboo poles which are fastened one on each side, and which form shafts, into which two mules are yoked, one in front and one behind. The forward and backward movement, caused by the jogging of these animals, makes the motion very disagreeable; but it must be admitted that the mule-chair is much more comfortable than the springless carts. It is a great inconvenience, however, that it is necessary to unyoke one of the mules before it is possible to descend.

March 26, 1862.—I started from Pekin at 10 A.M. Soon after passing the outer fortifications a most violent dust-storm arose, which heightened in its fury so suddenly that, before I had proceeded a mile from the City-Wall, I found that the baggage-mules were unable to contend with it. I therefore sought shelter at an inn, and after a little perseverance obtained accommodation. Here I was detained twenty hours, unable to sleep, and suffering intensely from the effects of the sand and the cold, which was very severe.

March 27.—At daybreak the storm began to abate, and on rising at seven o'clock I found the thermometer at 24° Fahr. Although the wind continued high, it was unaccompanied by sand, so I made a start. The ravages of the storm were perceptible in every direction: large trees were uprooted, hedges thrown down, and houses unroofed. In some spots the sand had formed mounds varying from one to six feet in height, and parts of the road were so completely covered over that it was impossible to trace it. At 6 P.M. I reached Hankow, 30 miles from Pekin, where I was lucky enough to find a good inn.

March 28.—At 6 A.M. the thermometer stood at 30° Fahr., at 3 P.M. 54°. Hankow, where I halted this day, is situated at the mouth of the Kwankow Pass, and was formerly a strongly fortified military station. A sub-branch of the Great Wall passes through it.

March 29.—The cold having abated, we started for the Kwankow Pass. The track through this pass is 15 miles in length. It is very rugged and tortuous, always difficult, in some places dangerous. It is a rare occurrence for vehicles to cross this pass without some accident happening, and my experience would lead me to recommend that any traveller following in my footsteps should avail himself of a coolie-chair. I rode across; but had I known at starting what kind of path was before me, I should certainly have ordered a chair. Great numbers of Chinamen, in companies, passed me, carrying large cases. On inquiry I discovered that these formed part (the rest having been sent on before) of ten thousand stand of rifles, which the Russian Government had engaged to give to the Chinese, in part consideration of the cession to the Russians of the country lying north of the Amoor. I also learnt with pleasure that these arms should have been delivered two years previously, but that the Russians had withheld them, so that they might not be used against the Allied armies of England and France.

The mountain-scenery on each side of the track, though not grand, may be described as bold. But the feature I was most pleased with was a large frozen waterfall. It was the first I had ever seen, and the sun shining upon it gave it a most beautiful and

striking effect. The occasional streams were frozen nearly a foot thick in some places, although the heat had already begun to thaw the surface.

Several droves of Tartar ponies, of from 300 to 400 head each, passed me to-day on their way to Chinese markets. They were very strong, wiry, little animals, and I was given to understand that I might purchase them at three dollars a head, or about thirteen shillings. At a very narrow part, where the track was precipitous and uneven, I met a Mongol Mandarin of the blue button, in charge of about two hundred coolies, bearing cases of arms and four ammunition-boxes. He very angrily ordered my people to stop, whilst I told them to go on. Our opposition was about to terminate in an encounter, when my servant interfered, and represented me as Ta-ying-ko Tien-fung, "the great Englishman of Heavenly abundance." Tien-fung was the name by which I was known in China. All foreigners are named anew soon after their arrival in the Celestial Empire. The path was immediately cleared for us, and the Mandarin and I saluted each other with a chin-chin.

Passed through a gateway of the main portion branch of the Great Wall. The Wall here is in an excellent state of preservation. At 2 P.M. arrived at Chetow, the first village to the north of the pass, boasting a very large inn, which presented an appearance of great bustle. About two hundred donkeys were being laden to go through the pass. Chetow lies in a spacious, highly cultivated amphitheatre, the hills surrounding which, robed in the softest and most varied hues, were hemmed in by a back-ground of distant snow-capped mountains which reflected the rays of the evening sun, forming a landscape of singular beauty and grandeur.

Yuliang, which I next passed, is a small fortified town of one street, apparently a military station. On approaching Hulayén is a temple, on the top of an isolated rock, having a great resemblance in the distance to Dumbarton Castle. Here I stopped for the night.

March 30.—Fahr. 46° to 82°. Started from Hulayén (pronounced Why-lien) at 7 A.M. Passed Tatumah, a town which seems to have been of some importance, but which is now very dilapidated and almost forsaken. Passed successively Sachung, a large fortified market-town, Tupali, and Paognan, a fortified town, situated between Sachung and Kee-Ming, which is invariably placed 20 miles to the eastward of its actual position. Here is made the Wong-chu, a yellow wine, the most highly esteemed of Chinese wines, and only found at the yamuns of the highest dignitaries. Kee-Ming, my night stage, 30 miles from Hulayén (Why-lien), is a large fortified city at the foot of a mountain, and is apparently

liable to inundation. Here is the General Post Office for the north of China.

March 31.—Started from Keeming at 7 A.M., passed a good-looking village, called Hoi-ho. Also a new village called Sha-Hoh. Breakfasted at She-shi-foo, 10 miles from Kee-Ming. The road between the two last-named places is often difficult and rugged. At one point, when rounding the apparently impassable corner of a rock, we found the path only just wide enough to allow a passage; between high cliffs on the one side, and on the other a rapid current. Sometimes the road is very steep, and should one of the saddle animals make a false step, its rider would be very apt to be precipitated into the boiling stream beneath. In the spring, when the snow melts, this stream attains the dimensions of a large river. Passed several coal-pits in operation to-day. The coal is not of a very good description, being small and scaley.

April 1.—Suen-ho-Fu, which I reached towards nightfall, is a large fortified city of from 80,000 to 100,000 inhabitants. The main streets are wide and clean, having avenues of large trees on either side, on which countless crows had formed colonies. The city is under the government of twenty-four mandarins of high grade, amongst whom it is reported are several members of the Imperial family. Here is the chief seat of the Mission of St. Lazarus, at whose head is M. Gotlicher. I was informed that the Mission numbered 600 converts. Some very fine felt hats were offered to me for sale, Suen-ho-Fu being the greatest emporium for felt in China, besides which the inhabitant susually manufacture their own paper. Breakfasted at Yulien; fare—*omelettes aux fines herbes* mutton-chops, *pommes-de-terre frites*, excellent *scones*, teal, claret, coffee, and *chasse*—not so bad for Mongolia. I greatly fear I gave the Llama here too much brandy. He liked it amazingly, however, and, producing his prayer-book, chanted blessings on me by way of showing his gratitude.

At about four o'clock I arrived at Chang-Kia-Kow, called by the Russians, *Kalgan*. It is situated 40° 45′ N. lat., and 115° E. long. This is the most important commercial town in the north of China, inasmuch as all imports from, and exports to Russia, pass through its gates. It is 14 li in length, or about 4½ miles. A great part of this, however, is suburb; the actual city is fortified. The total population is estimated at 200,000, of whom 10,000 are soldiers. The municipal authorities are eight mandarins of high rank. On inquiring the reason for the report of a gun which I heard, I was told that a despatch had just been sealed for the Emperor, and that it was customary to give such a despatch a salute.

On my arrival two Mandarins of the white button waited upon

me for my passport, which they took away with them, but returned in about one hour, saying that it was in order.

April 2.—This morning I paid my visit to the Taou-tai. After waiting in the court-yard of the Yamun for half an hour, I was admitted. He was a surly old fellow, of the pink button, and I was very much disgusted with him. I asked him to render me assistance in procuring camels. He told me to apply to my hotel-keeper; that he had nothing to do with it. I wished to be furnished with a passport in the Mongol language; he told me through his Secretary that it was unnecessary, and that I had nothing to fear. The Mandarins to the east of Pekin had shown me every courtesy in their power, giving me cavalry-escorts and extra servants, besides ordering that I should be well received wherever I went. This old fellow, on the contrary, appeared almost disposed to throw obstacles in my way. I observed here many tons of tea, which were being prepared for transport to Russia. It is said that both the import and export trade of Russia is on the decrease; but, notwithstanding this, the Russians have the contracts for the superior qualities of teas, and I am inclined to think they will continue to keep them, as they pay such far higher prices than other foreigners, and have, besides, the advantage of a very old connexion with the people who grow the best teas. Excellent potatoes are grown here, and very fine beef and mutton are also to be procured.

Extensive mines of silver and copper have been worked in Shi-wan-ze, but are now, I believe, discontinued for State reasons.

In the neighbourhood of Chung-Kia-Kow the sportsman may find full employment for his gun: wild duck, teal, wild geese, and snipe; deer, antelopes, wolves, leopards, wild cat, the eagle, and occasionally the tiger, are among the varieties of game he may depend upon.

I made an engagement with two Mongols for five camels and a cart to take me to Kiachta. They were to accompany me as servants, and I was to provide my own food. They asked me 170 taels, or about 57*l.*, but my servant persuaded them to reduce this demand to 110 taels—about 35*l.* Both my servants declined to cross the desert with me, being afraid of the effects of the cold. I sent them back to Pekin, as well as my pony, as I was given to understand that the herbage would not prove sufficient to support an animal that was accustomed to good food.

April 3.—I purchased provisions here, consisting of a joint of beef, 1 cwt. of potatoes, 28 lbs. of biscuits, and plenty of tea and sugar. I also had 2 dozen of brandy, 2 dozen of port-wine, 1 dozen of claret, and 1 dozen of rum, besides plenty of tobacco. I did not take more solids, as I laboured under the impression that I should find on the route beef, mutton, cheese, and milk. I likewise dis-

posed of my own tent, which I afterwards had much reason to regret.

In passing the gate of the Great Wall, where all duties are collected, my passport was demanded. Outside of the gate is the Mongol settlement, and a short distance beyond is a village inhabited both by Chinese and Mongols, whose domiciles are artificial caves, hollowed out in the side of a rising ground. They are regularly arranged, and present the appearance of streets one above another. These are said to be very warm in the winter.

The journey to-day was performed in a cart drawn by horses. The road is rugged and stiff, so much so as to render it almost impossible for a camel with a load to traverse it.

On ascending the highest summit of the mountain range which separates Mongolia from China, a magnificent panorama is presented to the view, over the wildest and most majestic mountain scenery. The Great Wall crosses this desolate spot, but the ravages of time have almost levelled it with the ground.

After gazing our fill, we gradually descended to a distance of about 26 miles from Kalgan, where, lying under the slope of a fertile hill, we arrived at a caravan of one hundred sleeping camels. In a dirty, tattered tent, a bright fire illumine the faces of a dozen Mongols, who were seated around it on their haunches, each bowl in hand, anxiously expecting the evening meal. After tasting their soup, I returned to my cart, and passed the night without undressing. As, moreover, I did not quite like my situation, I did not sleep, but kept my revolver within arm's length, in case it might be wanted.

April 4. Fahr. 20°.—Stations, I think, are named from the various wells on the desert: there is seldom a habitation of any kind in the neighbourhood. The name of this station is Taban. A beautiful morning. Hundreds of camels grazing on the green slopes. Our line of march from day to day is somewhat as follows. The camels having been collected, are first arranged in five files, the same baggage being always fastened on the same beast. Through each camel's nose is passed a wooden peg, to which is attached a cord about six feet long. In marching, the loose end of the cord is fastened to some of the gear on the back of the camel in advance, and in this way one man might guide a thousand camels, if it was not that the peg in the nose becomes loose sometimes, or the cord gives way, in which case a short delay results for re-adjustment. A strong camel is now harnessed to my cart, which is a cumbrous vehicle, with broad, heavy wooden wheels. There is no iron on any part of it, and it is covered with felt. The length is about 7 feet, and the width 30 inches. The tent is struck, thrown over the back of a camel, and off we start in Indian file, my Gobi chariot in the centre, with the two Mongols whom I engaged doing duty as guards, one on each side.

By 9 A.M., the thermometer had gone up to 40°. After travelling 60 li, or 20 miles, we halted at 4 P.M., at a place called Tahungko. One of these encampments is highly picturesque. The camels, arranged as usual in five files, are made to sit on their haunches, and in five minutes are all disburthened of their loads. (It takes fully half-an-hour to pack them every morning.) After the baggage is lowered from their backs, the nose-cord is fastened round their necks, and they are allowed to graze till dusk, when they are again collected and secured each to his own particular load. The tent, about 18 feet long by 12 feet wide, having two poles about 10 feet high, is now pitched. Sufficient *argol* is collected for the night, and a fire is lit in a circular grate, which is placed in the centre. The argol gives a bright red heat. An open cauldron is now placed on the grate, and filled with water which has been drawn from a neighbouring well, or if there is snow on the ground, sufficient is collected for culinary purposes. The first refreshment consists of pounded brick-tea, which is thrown into the water and boiled. The Mongols drink this without sugar, from wooden bowls, which they clean by licking it with the tongue, and then place it in the breast of their coats. The next dish consists of boiled beef or mutton, which they eat in junks, swallowing large pieces at a time. Some millet is thrown into the water in which the meat has been boiled, which makes a soup. The wooden bowl is again resorted to, and the repast is followed by a pipe. The chief of this caravan drank samshoo, which he had purchased at Chang-Kia-Kow ; but the other Mongols had to content themselves with water. When a stranger enters, which is often the case at meal-times, he salutes the inmates with "Mindooena!" (May all be well), and is offered some of the fare; and as a matter of courtesy, pipes are exchanged, which it is Mongol etiquette to refill when returned. After the camels have been collected and secured for the night, another cauldron of tea is made, another pipe is lit, and then huddling as near the fire as possible, the men undress and sleep naked, with their sheep-skin coats for a covering, and their boots for a pillow. They never move from the position in which they fall asleep, till they rise in the morning. If they did, and the coat was to fall from off them, they would, on a cold night, be frozen to death. At three o'clock in the morning they rise, and whilst the camels are being laden a cauldron of tea is prepared. They drink this, mixed with millet, before starting, and it serves them till their evening meal. In taking their repasts they squat in Indian fashion, round the fire, sitting upon their feet.

April 5. At 4 A.M. Fahr. stood at 11°. The camels wanted a rest, having eaten little for two days, so we remained to-day at Tahung-ko.—4 P.M. We have had a snow-storm for the last three hours, the wind so strong as to blow the snow almost horizontally.

April 6. At 6 A.M. Fahr. was 10° below Zero, or 42° of cold.—It was so cold last night I could not sleep. A bottle of claret at my side was completely frozen. At 9 A.M. started, and at 3 P.M. arrived at a station called Hamka. The two Mongols with whom I made the engagement left, having contracted with the chief of the caravan to take me to Kiachta, giving him a small proportion of what I had paid them.

April 7. Fahr. 4° below Zero. The snow 3 feet deep.—We cannot proceed to-day.

April 8. Fahr. 10° above Zero.—We started this morning before daybreak. Saw a herd of deer. Arrived at a station called Ungol Tzar-a-nore.

April 9. Fahr. 10° above Zero.—The Mongols make thread and cord from the wool plucked from under the neck of the camel, with which they mend their coats.

The wind was so cold to-day that the camels laid down several times. At 3 P.M. arrived at Tsankal.

April 10. Fahr. 10° to 32°.—A splendid day. Large eagles at easy shots. Lots of rats, resembling the kangaroo-rat. Arrived at Oonegut.

April 11. Fahr. 24° to 50°.—Two Mongols paid us a visit: one rode on a saddled bullock, the other on a camel. They begged tobacco, which my chief refused. Arrived at Borro' Hotuter.

April 12. Fahr. 30°.—So far the country has been gently undulating—occasionally hilly. To-day extensive plains. Arrived at B'yshunt.

April 13. Fahr. 30° to 42°.—Arrived at Shirray. Visited a *tseuma* or temple. It is a low mud house, having a Buddha on the altar. Three or four Llamas live in the vicinity in *gharries*. The *gharry* is a stationary tent, made of staves, which are trellised and covered with felt. There is a hole in the centre of the roof, through which the smoke makes its exit.

A woman paid us a visit. The Mongols pounced upon her to mend their clothes and boots. I bought a little bit of cheese from her, which had a peculiar taste. The name of the station to-day is Ortoghal Tseuma.

April 15. Fahr. 43° to 72°.—The land gently undulating, apparently higher as we advance, and vegetation rather richer. Numerous herds of cattle and flocks of sheep. Several whirlwinds of sand passed quite close to us. It was a lovely calm evening when we encamped on a perfectly flat and vast plain. The station on which we then were is called Taban Talloghai.

April 16. Fahr. 40° to 70.°—We encamped to-day at a station called Gobi, situated under the brow of a high precipitous hill, apparently red sandstone. The soil so far has been a yellow clay. The track we have made has always been north-west. It is covered

over with a slight coating of yellow sand, studded with innumerable little carnelians and agates, together with some spar and sandstone.

April 17. Fahr. 26° to 62°.—I found myself to-day in the midst of curious rocks and hills, presenting every sign of volcanic action. Immense blocks of marble are thrown here and there: there is also granite and slate in abundance, while numerous caverns, high up in the rocks, form the resort of great flocks of birds, resembling the swallow in appearance and the pigeon in size. Large herds of deer and quail in great numbers were also perceived. Arrived at Atturawah.

April 18. Fahr. 36° to 48°.—It blew a hurricane all night, and we could not stir this morning. The camels lay all day till towards evening with their backs to the wind—a repetition, in short, of the storm of the 26th of March, on leaving Pekin. One camel made off during the storm, and its loss was not discovered till next day. Arrived in the evening at Tuptuntoolaghai.

April 19. Fahr. 34° to 70°.—Fine morning, blowing all the rest of the day. The proprietor of the lost camel started in search of it, taking random instructions from me. Crossed many sand-hills to-day, and fell in with a small lake. Encamped at Gashong.

April 20. Fahr. 28° to 36°.—Arrived at a station called Hungor. The man who had lost his camel returned without having recovered it, but started once more in full faith I should put him on the right track. To-day we passed six withered trees and visited a dry well.

April 21. Fahr. 36° to 80.°—Killed a lizard to-day. Great numbers of flies, jumping on the grass. Arrived at a station called By-Yung-Gobi.

April 22. Fahr. 50° to 72°.—Passed four withered trees. Great numbers of quail to-day, and several miles of brushwood. Crossed a stream of beautifully clear water. The Mongol returned, having found his camel where I indicated, and is consequently full of devotion to me. Met a caravan transporting Russian cloth. Instead of shaking hands, the Mongols cross each other's arms. Arrived at Towah.

April 23. Fahr. 42° to 46°.—Hail to-day and very gloomy. Arrive at Katullusah.

April 24. Fahr. 25° to 46°.—Beautiful day, but snow six inches deep. Plenty of deer, several eagles, flocks of birds. Country hilly. Arrived at Hourri-shunt.

April 25. Fahr. 46° to 60°.—Arrived at Dewan-Shirray.

April 26. Fahr. 48° to 68°.—Arrived at Ooté.

April 27. Fahr. 68° to 74°.—Beautiful sunset. Rocky mountains in the west. Arrived at Tooroo.

April 28. Fahr. 48°.—To-day we pass through a range of rocky hills, which present a most remarkable appearance. Sometimes the

rocks have a resemblance to the ruins of a fortified castle; sometimes it would seem as though a village had existed. They often assume fantastic shapes, but their great singularity consists in their formation. Each rock appears to have been built as it were by art; one stone lies upon or alongside another, and although the shape is different, they remind one involuntarily of the Giant's Causeway, in the north of Ireland. We encamped to-day at Tsaran Boloz.

April 29. Fahr. 44° to 48°.—Our track lay principally through a sandy desert. We arrive at Zotogh.

April 30. Fahr. 34° to 42°.—The country to-day was undulating and hilly; the herbage somewhat richer. At 3 P.M. we arrived at the domicile of Batma, where the chief of the caravan, a high Llama or priest, came to meet us. All the Mongols descended from their camels on his approach, and after bending almost to the ground, offered their uncovered head for a benediction, which the priest gave by laying on his hands.

On arrival at the gharry, Batma's family came to salute and embrace him. The women were dressed in their most gaudy finery, and wore immense ornaments in their hair and round the neck. Virgins are distinguished by a girdle tied round their waist, which is no longer worn after marriage.

The name of this station is Arrah-atton-shoh. It is not on the direct track to Kiachta: we have, in fact, come considerably out of our route, that the chief might visit his family. We spent four days here, Mrs. Batma presenting me every morning with boiled sheep's neck, which is tasty. The milk of the camel seems richer; but I had not an opportunity of tasting it. Several sheep and calves die from disease: these are cooked and eaten, and the skins preserved for clothes. During my stay here the tent was placed at my sole disposal. I had also numerous visits daily from the inhabitants of the neighbourhood, begging for matches, tobacco, brandy, and powder, besides many inquiries for razors, needles, and thread. I recommend travellers to take these with them as presents.

May 5 to 8.—Our track lay through high mountains, where we saw numerous herds of deer. Starting alone to shoot hares, which are numerous here, I observed, as I thought, a buck, and ran in the direction along which it would pass, with the intention of shooting it: to my dismay I discovered, on a near approach, that it was a large wolf. He did not alter the quiet pace at which he was going until I fired, when he ran off. I understand that in packs they sometimes attack a caravan.

At all stations cattle and sheep are penned for the night and guarded by watch-dogs of a very fine breed, resembling what one could imagine a cross between a Great Saint-Bernard and an English sheep-dog.

May 9. Fahr. 32° to 90°.—Scenery mountainous; roads often very steep. Ourga, the capital of Mongolia, is visible in the distance, situated in a valley; one side of the mountains covered with fir-trees, the other side perfectly barren.

On arriving at Ourga I presented myself at the Russian Consulate, where I was very hospitably received. The Consul, who speaks French, was absent; but I made myself tolerably well understood to the acting Consul by means of the Mongolian language. An elegant phaeton, drawn by a splendid Arab, which had made the journey from India *viâ* China proper and the desert of Gobi, was placed at my disposal; and what with driving, billiards, and good living, I passed at Ourga two very pleasant days. The Russian establishment numbers about twelve persons. There is a colony of Chinese and about 25,000 Mongols, 10,000 of whom are priests. Each family educates one of its children as a priest: he is looked upon as a gentleman, and is not supposed to do hard work.

I hired four camels here to take me to Kiachta, at which place I arrived in four days, over a road so well-known that I need not describe it, as the scenery and ordinary "incidents of travel" upon it have been frequently laid before the general reader.

From Kiachta I proceeded to Lake Baikal, which I crossed in 8 hours in a steamer, thence to Irkutsk, and by Krasnoyarsk to Tobolsk, where, during an inundation of the great river Obi, I took steamer to Tumen, in about 62° N. Hence I returned to Europe by Ekaterinburg (near which I visited the celebrated mines of the Demidoff family at Nishni Tagilsk, where, within a radius of 10 miles, iron, copper, gold, platinum, and precious stones are found), and thence by Kasan and St. Petersburg. Actual time of travel from Pekin to Kiachta, 46 days. (Distance not stated.)

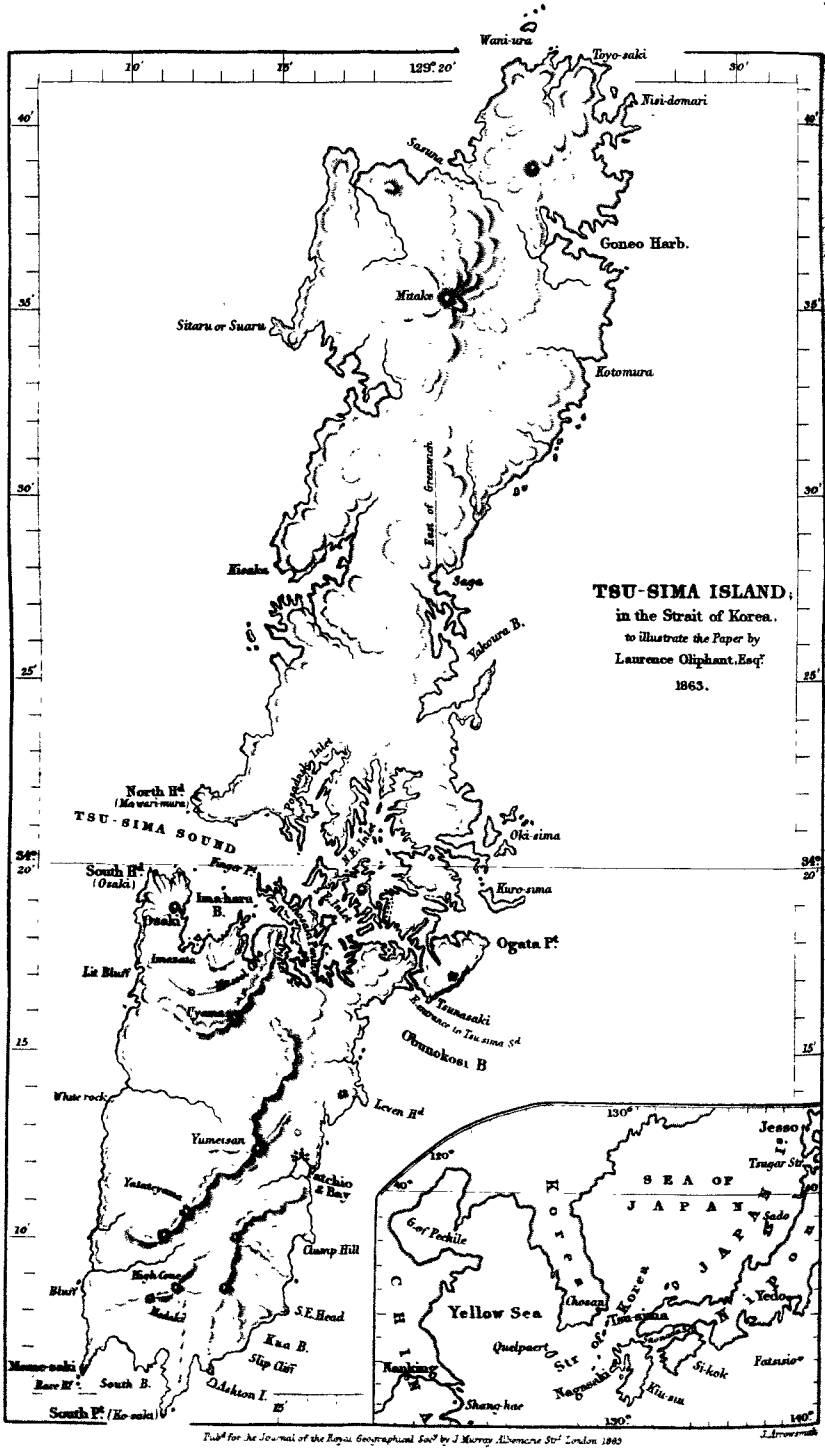
I had long been convinced that a more rapid communication between China and England could be attained by the adoption of the overland route *viâ* Mongolia and Siberia, and it was mainly with a view of carrying out this idea that I gathered on my journey every information bearing on the subject.

Although the foregoing is a very rude and imperfect sketch, the experiences of that journey have fully corroborated my previous anticipations regarding the practicability of a courier express being organised across the desert of Gobi, similar to that adopted in America between the Mississippi and California. But even this improved means of communication will, it is anticipated, give place ere long to a perfect system of electric telegraphy between London, St. Petersburg, Moscow, Kiachta, Pekin, and the Taku Forts.

V.—*A Visit to the Island of Tsusima.* By Laurence Oliphant, Esq., F.R.G.S., &c. &c.

Read, January 26, 1863.

In the early part of August, 1861, H.M. surveying-ship *Actæon*, Capt. Ward, arrived in the bay of Yedo. In the course of his surveying operations Capt. Ward had paid a flying visit to Tsusima, an island situated in the straits which separate Japan from the Corea, and which commands the entrance to the Yellow Sea. In consequence of the intelligence which Capt. Ward brought, it became necessary for me to proceed to Tsusima, and, as prior to the *Actæon's* visit no English ship had ever touched at the island, I venture to think that the few observations I was enabled to make during my short stay in this remote spot may not be uninteresting to the members of this Society. The Suonada or Inland Sea of Japan, navigated for the first time by an English man-of-war about four years ago, has since then been so frequently traversed by steamers of all classes, that it has become almost a highway of communication between Yedo and Nagasaki, and it is unnecessary for me here to describe it at length. Approached by narrow winding straits, which disclose at every turn some new beauty, we are in some measure prepared for the fairy-like scene beyond. Shut in from the storms of the ocean by the islands of Nipon, Kiusiu, and Sikok, not the least charm of the Suonada Sea is its repose: innumerable islands of all sizes and form rest upon its calm surface. The most enchanting combinations which can be conceived, of wood and water, of soft and rugged beauty, meet the eye. Some of these islets slope gently back, the hill-sides terraced with careful cultivation; others run out into the sea in projecting cliffs. Picturesque villages bury themselves in the recesses of secluded valleys, the sides clothed with patches of the feathering bamboos, or clumps of pine and evergreen oak. But while the never-ending variety of scenery in this Inland Sea forms an irresistible attraction to the stranger, its importance in a commercial point of view can scarcely be overrated. 240 miles long and from 30 to 50 miles broad, it is surrounded by populous cities, and its surface is dotted with the sails of innumerable junks. Some notion of the extent of the native commerce by which it is traversed may be gathered from the fact of our having counted in the course of our voyage no less than 1600 junks in the Suonada Sea alone. About 80 miles from the straits of Simonesaki, to the westward, lies the island of Tsusima. On the morning of the 27th of August I arrived off the southern end of the island in H.M.S. *Ringdove* The most striking object was a singular two-pointed peak, which rises from nearly the centre of the island to a height of 1760 feet. There is, however, another

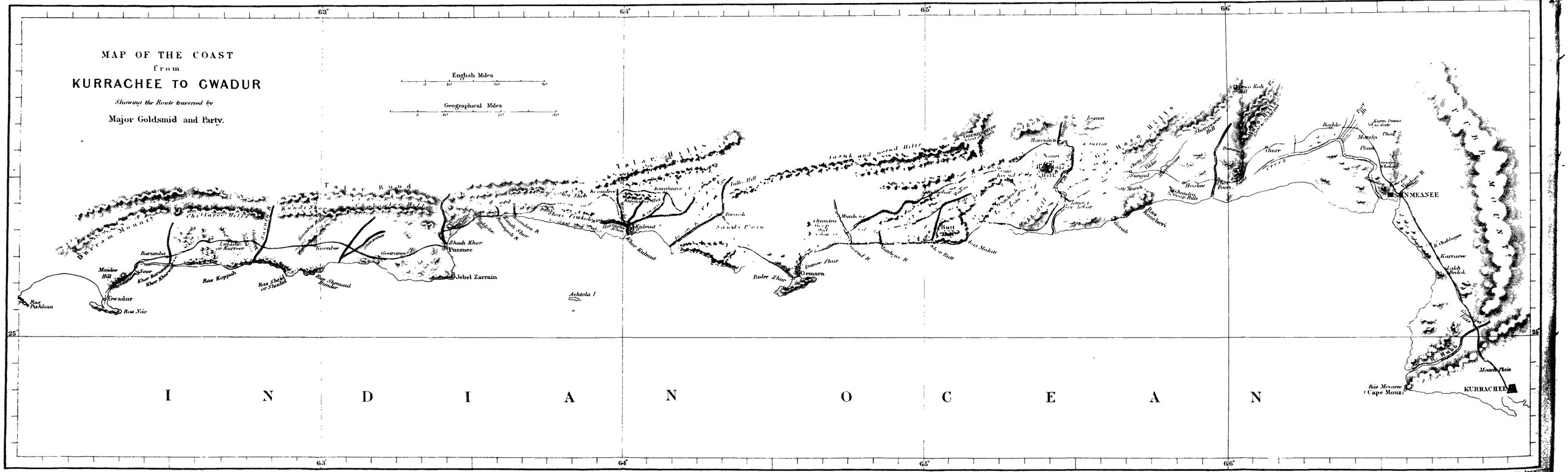


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mountain to the southward of these peaks, which is about 2500 feet high, and as far as we know is the highest point in the island. The southern portion of the island may be said to consist of two broad valleys, divided by a spur heavily timbered. The valleys themselves are partially inhabited and cultivated, and bear a striking resemblance to each other: the higher lands are all clothed with virgin forest. As we did not know the exact position of Tatchio, the capital of the island, it was necessary to send on shore and ask the way. Coasting along the east shore, which seemed sparsely inhabited and presented an abrupt and rocky coast-line, we ultimately perceived the indention we had been told to expect, and feeling our way cautiously into a somewhat exposed bay, anchored about half a mile from the town of Tatchio. Except for the small native craft, which take refuge in a cove behind a precipitous mass of rock, the harbour affords an insufficient shelter. This cliff rises abruptly from the water to a height of about 100 feet, and forms a striking feature in the scenery: it is covered by pines. The bay, which opens up both to the right and left of the entrance, is surrounded by wooded hills. The town itself is situated at the debouchure of a stream, which, flowing through a rich well-cultivated valley, falls into the right arm of the bay. As Tsusima is the private territory of the Prince, and as the Imperial Government scarcely exercises any control over him, I could not explore the town or neighbourhood as I should have wished. While negotiating vainly for an interview with the great personage himself, I was detained, jealously watched in a guard-house on the water's edge, and not permitted to stray ten yards in any direction. If I had no opportunity of satisfying my curiosity, the population of the town laboured under no such disability, and an hour had not elapsed before every man, woman, and child in Tatchio had, I trust, derived gratification from their minute inspection of the first Englishman who had ever landed in their city. The town of Tatchio is said to contain 10,000 inhabitants: it does not differ in appearance from any other Japanese town, nor did I perceive any difference in the dress or aspect of the population, though I am given to understand that their language differs in some degree from that of the Japanese of the other islands. The ostensible objection to my paying a visit to the Prince lay in the fact of his residence being four miles off. The real reason was, doubtless, the fear of his dignity being compromised by his reception of a foreigner. I was informed that his palace was three stories high, and was surrounded by many acres of park and ornamental grounds; that he himself was both morally and physically a most powerful chief; that his influence was great at Yedo; that his height was seven feet, but that he was covered with sores; that he had one wife, twelve concubines, and forty-three children; that his son was at Yedo as a hostage, and that some of

his illegitimate children were in the service of the temporal Emperor, while others officered his own army. So much time had been occupied by the messages which passed between the Prince's residence and the town, that it was nine o'clock at night before it was finally settled that I should have an interview with his principal Secretary of State, and I passed up a short street, on each side of which men were posted with huge paper-lanterns, to the building appointed for the meeting.

The arrangements made for my reception were primitive in the extreme: a low table, evidently constructed since our arrival, and about 18 inches from the ground, was surrounded by chairs of quaint form, the seats almost on a level with the table. Candles of great size, and each on a separate stand, lighted the room. The usual arrangement of pipes and tea was supplied to each individual, and as our interview lasted till past midnight, we sustained nature on cakes and sweetmeats, as well as on tea and tobacco. We got under weigh before daylight, and coasting along the western shore of the island, arrived at midday off Tsusima Sound. It is difficult to conceive anything more striking of its kind than the reticulation of deep channels, which, dividing the hilly country in every direction, forms a water-labyrinth, which can only be compared to Norwegian fiords; but the scenery, instead of being wild and rugged in character, is soft and rounded. Everywhere massive foliage droops into the water. Here the whole navies of the world might be concealed without an anchor down, for every ship might be moored in deep water to the trees on the banks. Some idea may be formed of the extent of these lanes of water by the chart furnished to the Admiralty by Capt. Ward, who had surveyed this sound a few weeks previously; but to appreciate its beauties one must explore its infinite recesses in a boat. The time at my disposal was so limited and so fully occupied by other duties, that I had but little leisure for this interesting pursuit. The shores of the sound are thinly peopled: here and there a few fishermen's huts line the margin of the bays; but for the most part the virgin forest clothes the hills to the summit with heavy timber. Evergreen oak, sycamores, maples, cypresses, conifers of great variety, are the most common; but I understood from one of my companions, more qualified to judge than myself, and who had visited the mainland, that the flora generally partook rather of a Manchourian than a Japanese character. Tsusima produces wild cats, and deer of species unknown in Japan; the pheasants are also different from those of Niphon. I had no opportunity of satisfying myself on these points, and as my authority is Japanese, I only mention them as a subject worthy the attention of future visitors. The whole island is hilly and heavily timbered: its formation is volcanic. It is almost bisected by the sound I have just described,



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the Northern Island being somewhat the largest, and at high water is, in fact, two islands. At low water a sandy spit at the eastern extremity of the sound connects them by a dry causeway. Stakes are put along this bank to prevent the passage of boats at high water. The entire length of the islands is about 35 miles; their breadth from 8 to 10 miles. A road connects Tsusima Sound with the capital, distant about 9 miles. The total population of the islands is about 30,000; but our knowledge of the Northern Island is as yet very limited. The Prince of Tsusima, who is absolute proprietor and quasi independent chief of the whole country, maintains a garrison of 300 men at Chosan, a town in the Corea, distant about 40 miles from Tsusima. He enjoys an entire monopoly of the trade with the Corea, which consists of tiger-skins, hides, rice, silver and gold. A large part of the gold in circulation in Japan is said to be Corean, and traffic in this precious metal is a chief source of wealth to the Prince. Under what terms Chosan is held by a Japanese garrison, and what are the precise relations which subsist between the Japanese Imperial Government, the Corean Government, and the Prince of Tsusima respectively, are points upon which we are not as yet informed; but the time is probably not far distant when our political as well as our geographical knowledge of this most interesting and highly-favoured spot will be widely extended.

VI.—*Diary of Proceedings of the Mission into Mekran for Political and Survey Purposes, from the 12th to the 19th December*, 1861. By Major F. J. GOLDSMID, F.R.G.S.

Read, March 23, 1863.

December 12, 1861. Kurrachee to the Hubb River, 9 miles; thence 3¼ miles to camp; total, 12¼ miles.—Encamped on the Beyla or right bank of the Hubb, near a few huts of the Sheikhs and Kurmuttees; soil sandy, with scattered jungle; dews heavy at night; water from river-bed muddy, but good when filtered.

The March from Kurrachee, which we left at 7 A.M., is through the shallow bed of the Lyaree to One Tree Tank; thence through the Moach Plain to the rising ground, and by an easy passage between the hills, terminating at Cape Monz. From this point the valley of the Hubb opens out, the descent into it being very steep, and the Pubb Mountains are descried branching off in lofty irregular ranges N. and N.W. Passed two Dhurmsalas, one about 8 miles on the right of the road, and one on the left bank of the Hubb. At the last the made road ends. The whole march is

easy, and the passage of the river, though wide and always filled with water, attended with no difficulty. The fords should, however, be ascertained, as there occur patches of quicksand. The depth of the river at this (the dry) season, before the January rain, averages about 3 feet. The soil about this portion of the Hubb Valley is evidently free, in great measure, from salt, as is apparent from the quantity of jungle and low trees which have replaced the prickly pear of the earlier portion of our day's march.

Dec. 13. In camp.—Rode out with Dr. Lalor to the Gundopa Hill, distant about 3½ miles from the river; and on the left hand side of the entrance into the Pass, climbed to the summit of one of its highest peaks, probably 350 feet from the level; a wide-spreading mist in the horizon unfortunately prevented a clear view of the surrounding country; but the line of hills crossed on the previous day, and forming Rás Móvaree, or Cape Monz, to the southward, could be distinctly traced. An island and the sea-beach were visible to the westward; hills to the north and east. In ascending Gundopa, we followed the rocky bed of a torrent for a considerable distance, and then struck up the shortest practicable way to the top. The hill is stony, and has much scattered vegetation.

Dec. 14. Hubb Valley Camp to Kararree, 17¼ miles.—Good camping ground in green grass, about 2 miles from the sea. Water from two wells, slightly brackish, but drinkable; ample, moreover, for the day to supply our whole party. No village, but a good sized tent constructed of poles, reeds, and mats, divided into two compartments, marks the abode of the collector of the "Nakâ" or "Soonole," a tax of one anna in the rupee on merchandise in transit. Forage had been sent out by the Djam of Beyla;* but for which none would have been obtainable.

To-day's march was, for the first 3 miles, over a sandy but not heavy soil, and a tolerably level country, covered with toohur, kinir, booh, and many kinds of vegetation common to the so-called deserts east of Sind. Enter the Gundopa Pass, between a detached rock of insignificant size to the left, and a steep but not high offshoot from the Pubb Mountains on the right hand. The latter range has a strong dip seaward. Our road thus far was perfectly easy, and the ascents gentle; in fact, the incline was altogether trifling. Thence along a fair track through a generally level country, with grass and vegetation, towards the Morona Hill.† The ground now rises, and the sea becomes visible to the westward and W.N.W. At about 11 miles from first camp, passed a patch of grass and cultivation called Cheehâi, one of several beds of streams,

* The evening before I had written a letter to the Djam, stating that we had entered his territory, and hoped to be at Sonmeanee in two marches.

† See note to Diary for 15th December.

where water is procurable from wells. The cultivators are Noomryas and Sheikhs. Three miles further, after passing some sandy ravines, the road descends by a winding, bold, and picturesque defile to the plain country near the sea-shore. Although there is but little rock or stone, or indeed anything but sand on either side, yet the appearance of this descent is most imposing. The stupendous walls have a hard and rugged aspect; and the deep ravine over which they tower has a grandeur which could scarcely have been caused, except by some great convulsion of nature. The view of the green sea, and a comparatively fresh country along the shore, obtained from the outer angle of the Pass, before diverging finally into the plain, afforded a very pleasing contrast to the deep yellow mass from which the cortège had emerged; and the "Lakh Bedok" cannot fail to be recorded as the one remarkable feature in the whole route from Kurrachee to Sonmeanee.

From this point the track leads along an open sandy country, covered with tamarisk and other vegetation, by a path bisecting the space between the sea and a long range of sandy cliffs, decreasing in height as compared with those overhanging the Pass, and gradually assuming the form of ordinary coast-hillocks or dunes. The route, however, inclines gradually to the sand-cliffs, which after a while trend to the northward, or inland; so that the distance between the sea and the line of march increases from less than a mile to more than 2 miles before the encamping ground is reached. About 2 miles short of to-day's camp, is a ravine to the right, where are a well and drinking-trough. This opening in the range of hills is known as Borud, or Borudhu. The inhabitants of Karraree, the halting-place, such as there are, may be considered Bannyas and Guddras (slaves). The wells dug at Karraree are 8 or 10 feet in depth, with rather brackish water.

Dec. 15. Karraree to Sonmeanee, 16¼ miles.—Encamped on a patch of tolerably good hard ground, north-east of the town of Sonmeanee, near sand-hills, and close to the site of the old British Residency. Water slightly brackish from wells, but sufficient. Provisions and forage abundant.

Continued to-day our march between the sea and sand-hills, the intervening distance gradually increasing. About 2 miles after leaving Karraree, we crossed the dry bed of the River Chebbaijee. Next passed certain patches of garden cultivation, called "Arub"* and "Drukk," the water for which is obtained from small tanks and wells; also a burial-ground of Noomryahs on the right. The cultivators here are the Wachâni family of the last-named tribe. The route now reaches the Vindore River, † which flows seaward

* Doubtless from the mango-trees grown there.

† The Vindore evidently rises in the hills among the Djamote villages above

about 2 miles south of Sonmeanee, and crosses its dry bed near the white tomb of Shah Djemal, which stood on a sand-bank to our right. A little way further, we came upon a cluster of mud houses, which is the first indication of Sonmeanee, and reached our camping-ground by a winding sandy track, passing near the harbour, which lay on our left.

Not far from the Chebbaijee River we were met by a cavalcade sent out under orders from the Djam of Beyla. The two principal persons in this assembly were the Diwan Dewun Mull, a down-looking, unprepossessing Hindoo, and Nawaub Azim Khan Djamote. The first is the Comptroller of the Djam's Exchequer, as well as his political adviser; the second is the Governor of Sonmeanee, and exercises a quasi control along the line of coast from the Hubb River to the Hingor. We exchanged a few words of ordinary greeting, and then proceeded on our way together. They were civil, and anxious to please; the Djam having directed them to place themselves at our disposal.

After arranging for an interview with the Djam himself, who sent us a courteous message, we strolled down in the afternoon to the harbour * and sea-beach, and had some conversation with the inhabitants; one man, Yoossuf Khan, a handsome, intelligent-looking young Brahooee, whom I had noticed in the Diwan's retinue, I now engaged to accompany me in the morning on a little excursion which I had contemplated. We were to proceed by boat along the harbour to a point near our proposed first march towards Mekran. There our riding-animals were to meet us, and we would return by the road, striking into the marching route at the nearest point attainable from the place of disembarkation. This arrangement would give me an idea of the comparative merits of the lines of road by the seaside and inland respectively.

Dec. 16. At Sonmeanee.—Mr. Ryland and I set out about 8 A.M., and took a "machooa," or fishing-boat, which was waiting for us on the north-west side of the town. The shallowness of the water made it necessary that we should be conveyed to our destination in a canoe. These are formed of one solid piece of wood, scooped out, and are brought from Cannanore, or its vicinity, on the Malabar coast. Proceeding along the boat-channel on the western side of the harbour,† we soon turned into a deep-water

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Shah Billawul. I believe it to be the same river mentioned in Route xiv., Part 2, 'Province of Sind,' published by Government in 1855. The Morona Hill, mentioned in my itinerary of the 14th instant, may not improbably be the Morontoburn of Arrian, and found in Arrowsmith's Ancient 'Atlas Imperii Persici.'

* The harbour of Sonmeanee is nothing but the head of a shallow bay. Country boats of 25 to 30 tons burthen can at high water come close under the town, but larger vessels must at all times lie outside.

† The harbour of Sonmeanee has long since been pronounced by Lieut. Montriou unfitted to receive large vessels, which would have to anchor outside in

channel. This is described by Lieut. Montriou as running "up to the northward for about 7 or 8 miles, where it loses itself in a deep morass and tamarisk jungle, over which, in heavy rains, the Poor Ali River is said to flow." But we observed that this wide deep channel must be of far greater extent than supposed; and as it was essential to mark its course with reference to any proposed line of telegraph-posts communicating from Sonmeanee towards Mekran, I determined to bear it in mind for our first march or two out of the former place. After a sail of nearly seven hours, during which we must have progressed some 16 or 18 miles, we landed near sand-hills and tamarisk-bushes on the north-west side of the creek. Finding camels here, we made the best of our way over heavy sand and swamps to the so-called high road, reaching it shortly before sunset, so that it was night when we returned to Sonmeanee.

Dec. 17. At Sonmeanee.—Visited by the Diwan to-day.

Dec. 18.—The Diwan came over this morning fully equipped for a ride, and said he wanted leave to go and meet his master. Shortly after, a movement of the mob, which had been patiently standing on the lookout from morning till midday on the sand-hills north of our encampment, announced that the Djam was close at hand. Then was heard the boom of a gun, followed by two guns, which expenditure of powder exhausted the salute of welcome. Presently the whole cortège passed within sight of our tents, and entered the town. All progressed satisfactorily. The usual complimentary messages were exchanged, and it was arranged that I should receive Djam Meer Khan at four o'clock in the afternoon, at which hour our little Durbar was held as agreed, our conversation being almost wholly in Persian, which the Djam spoke fluently.

Dec. 19. At Sonmeanee.—Being detained, waiting instructions, I to-day returned the Djam's visit. We were received in state, and after conversing for about a quarter of an hour, rose to take leave. Djam Meer Khan claims the whole of the sea-line of country from Ras Movaree or Cape Monz to the south-east, up to the Roombra River, west and north. Raisé Rahmul Bollah, the Khan's agent, believes the Roombra to be the correct boundary to the westward, but he has no certain information on the subject.

The extreme length of the province of Beyla cannot well exceed

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6 or 7 fathoms water. This anchorage is, moreover, unprotected from southerly and westerly winds, and subject to a heavy ground-swell. Lieut. Montriou explains that there is a bar across the harbour, the channel through which "deepens" over "into a channel on the eastern shore . . . . . terminating at about $1\frac{3}{4}$ mile westward of the town." He adds, "On the western side of the entrance there is only a boat-channel leading into a deep-water channel." I would call this a creek of the sea, which at one time may probably have been the actual mouth of the Poor Ali. Indeed Mr. Dalrymple's chart of 1795 leads to the belief that it was then so considered, as he shows no distinct harbour.

100 miles. It is bounded on the north and east by the Pubb and Djhalowan Hills, on the south by the sea, and on the westward by a more westerly offshoot, seaward, of the greater Haro range.

Dec. 20. At Sonmeanee.—A visit to-day from the Djam, to whom I explained the object of my mission.

Sonmeanee suggests the idea of Kurrachee prior to British occupation. It is little more than a fishing village, as its name, "Meanee," implies; though why the affix of "Son" (gold) should be accorded it seems hard to divine. The houses, about 300 in number, are built of mud, and few have a substantial appearance. The Badban, or ventilator, is seen on the roofs of the greater number; yet the climate can be little different from that of Kurrachee. The thermometer during our stay ranged from about 64° to 80°.

Dec. 21. Sonmeanee to Buddo, 22⅛ miles.—We left Sonmeanee in the afternoon, after getting the agreement signed by the Djam, and marched to Buddo, where there is tolerable camping-ground in dry weather, at the foot of heavy hillocks of loose drifting sand. Water is supplied by one of the many outlets of the Poor Ali, ample in quantity, and of good quality. There is no village, but grass sufficient for a small detachment can be cut here; and kirbee is brought in by zemindars from a short distance. Our route for the first six or seven miles was along the high road to Beyla, at first over a marshy, but now dry plain, overgrown with bushes, called the Dotur-pall. This name is said to be derived from a fish known as the "Dotur," occasionally thrown up by the waters in these parts. We next came upon heavy sand-hills. These are classed as the Chor Lakkee and Thoohur Lakkee, or the passes of "The Robber" and "The Prickly Pear" respectively. To the left we passed a conspicuous sand-hill named Remekee. All hills and prominent objects have a name, and doubtless a legend attached. At Gooroo-Chela, about 6 miles, a place distinguished by two earthen mounds, known as the tombs of the Gooroo and the Chela, a road turns off to the right, below a range of low sand-hills, to Beyla and Syaree, our own track running between it and the sea over a marshy plain. This last becomes more or less salt or sandy, and is intersected by streams overflowing from the Poor Ali, no doubt after heavy rains. Proceeded some 7 miles further, and passed abreast of a clump of trees far off to the right, called Phat. Further on, about 2 miles, we reached a sand-hill on the left, called Ghutt, where are several huts and an encampment of Kurmuttees. About 2 miles further, to the right of the road, we came upon a kind of farm, inhabited by Angaryas, called Kurm Dinna jo Gate. Here there was an appearance of cultivation, and a crop of "Siroo" (mustard-oil) was grown in the neighbourhood. It was quite dark when we

reached our camping-ground, as selected from the highest of a cluster of sand-hills. There are some wells of water in the vicinity of this place, but it is, perhaps, better identified by a Bund built up by some men of the Birdee.

Dec. 22. Halt at Buddo.—We did not march to-day. It was late during the night when the rear-guard came up with the baggage.

Dec. 23. Buddo to Churr, 13 miles.—Marched to Churr, the camping-ground at which is on a salt plain. Water from river probably an offshoot of the Poor Ali. The forage for the camels proved sufficient, and the dry grass, called "Sen," is procurable for horses.

The first part of the march was over ground similar to that of the day previous: sandy and heavy at times, and again hard for want of irrigation over the parched soil. Tamarisk, babul, and kirrir jungle to the left, and behind them to seaward, a long ridge of sand-hills, which gradually hemmed us in in front, at a distance of about 5 miles, just after passing a small tope of babul in a fresh grassy soil, with signs of cultivation. Continued our route through sand-hills, debouching shortly upon the plain country at the foot of the lesser Haro range of mountains. In using the term "Mountains" throughout this portion of our route, it must be understood to mean hills averaging 1000 feet in height.

Dec. 24. Churr to Phor, 16 miles (Poori on chart).—March to Por or Phor, where there is salt soil at the camping-ground, and the water from the bed of the river is brackish. Camel-fodder as usual, as also forage for horses.

Our day's march was from the south-eastern side of the lesser Haros to Mount Por at the south-western corner, rounding the sea-face of the range. A pass, barely deserving the name, called the Por Soont, or Suekh Bherun Gogroo, brought us abruptly towards our new ground from the sea coast in sight of the greater Haros, Koocheri, the Chundra Goop mud-hills, and other points worthy of attention in our intended route. The lesser Haros range, about 7 miles from the nearest point at the foot of which we were encamped at Churr, rises boldly and perpendicularly from the plain country to a height varying from 1500 to 2000 feet. They run nearly north and south, and appear to be pure sandstone rock, quite bare of vegetation, and deeply intersected by torrents. The shapes and hues presented here and there are sufficiently wild and singular. Sometimes a cone, sometimes an arch, almost always a sharpness like that of a knife-blade, may be detected, and they are white, blue-black, or grey, at intervals. The most singular form which I observed was that of a long tent-canat, the folds of the cloth being distinct and regular. Our course lay towards the south-easterly point of these hills, as visible to us approaching

from the north-east. Distinctive names have been given to the more prominent points in the range. The northerly portion is termed "Nakatree," from a well so designated at their foot. The adjacent hill, in a seaward direction, is the "Kattiwar" Jubb, the name belonging to a well and three babuls in the bed of a stream which it produces. The last visible from the Churr encampment, and the most remarkable of all, is that of Dáramo, also the name of the principal stream flowing from the hill. On rounding Dáramo the hills at first sight appear to follow a westerly direction, but as the course changes they will be found to incline palpably to the southward. This fact was the more established in my mind by observing at sunrise the source of the creek traced up to this locality from the Sonmeanee Harbour; and Lieutenant Campbell's observations of the line of route kept and Mr. Ryland's survey all verified this conclusion.

Dec. 25. Phor, Por, or Poori, to Hookee, 7 miles.—Encampment here was on tolerably hard ground near sand-hills. Forage and fodder sufficient. Water scarce and indifferent from the only well available, and procured with some difficulty. But good water is found about 2 miles seaward, and again at 4 miles in a westerly direction at Supput.

I understand there was nothing to be noted in this short march, the road being much as that of the day previous on leaving the hills. Dr. Lalor and I started off about daybreak in a N.N.W. direction towards the greater Haros, where we examined a large white-looking hill, called the "Sharáwaree," from a mountain stream of that name. This description of hill is called by the Beloochees "Shor," not from any meaning such as given to the word in Sind with reference to salt earth, but from a pale ashy colour, which the word implies. This Sharáwaree is the type of a large number of similar objects. They emerge either in patches or in long ranges, immediately out of, or in some kind of connexion with, hard rocky hills, from which they are easily recognised by the singular contrast of colour presented. In this locality, where the pale mud-volcano may be said to abound, it is impossible to divest oneself of the notion that all the "Shors" are of that particular family. Under any circumstances they are by no means pleasing objects, and may be distinguished from the mountains they adjoin, like so many fungi or excrescences on the face of nature.

The Sharáwaree bulges out from a crescent in the north-easterly side of the greater Haros, the Dewo Koh Hill to the north forming the neck of the valley between the greater and lesser ranges. North to south may thus represent the general line of the latter, and north to south-west of the former, a valley intervening to prevent the union of the two. We very nearly reached the summit, a

height little short of 500 feet. The ascent was steep and rather difficult. We found no sign of active volcanic agency anywhere, but the whole hill was riddled through and through with cavities and chasms. The lower part was a succession of holes, all leading to one vast cavity. This we gradually lost the clue to as we ascended, though the character of the soil under foot showed no material change.

In returning we struck across country about 7 miles, and reached the tents at Hookee. On our way to the hills in the early morning we had passed one or two huts, or rather dwelling-places, of the few inhabitants of these parts. They were Angaryas. One of the men, Meshun, was recognized by Moolla Yoossuf, who drove my camel, as a noted shikaree of the Djam. He was invited to come and visit our camp, which he promised to do. We took a young and good-looking man with us as guide.

The houses of these stray cultivators or cattle-owners are chance trees in the desert plains or valleys. They just put up a mat or two, and the residence is complete. A clump of trees thus constitutes a village, in which men, women, and children, are content to dwell. Yet they do not all look poor or destitute. Those we met to-day not only looked clean and comparatively well-dressed, but seemed abundantly, indeed wholesomely fed. Nor did their cattle appear to want food or water. Sleek-coated bullocks and fine fleecy sheep are no rarities here. The supplies of water from the hill streams must give fertility to the valleys; if not in grain cultivation, at least in grass and fodder.

Dec. 20. In camp at Hookee.—Visited the Chundra Goop Hills and Ras Koocheri.

If we are to believe our guides, "Hookee" was formerly the resort of wild hog, and takes its name from this animal, for which the Beloochee word is "Hook." The Hindoos call it Silookpooree. Little more than a mile to the westward of our camp are three hills of light-coloured earth. That in the centre has a smooth and clean appearance, with a dark edge around its flattened crest. The hill to seaward is rather more rugged, but is not dissimilar. The remaining one is much the smallest, and is more rugged and furrowed. We inspected the "Goops" or basins of the two first, and found them full of liquid mud, and in action. We observed nearly the same process described by Captain Hart in 1840. At brief intervals bubbles appeared on the surface, varying in size and power, accompanied by a slight gurgling noise, but affecting only the immediate sphere of operation. Dr. Lalor obtained a bottle of the liquid, which he proposes to submit for analysis. The Hindoos look upon the phenomenon as supernatural, and consult the "Goop" as though it were an oracle of old. The Mahommedans, on the contrary, consider it the result

of natural causes, and believe the working of the volcano to be affected by the tide. I cannot but believe that the sea is the immediate agency creating the bubbles, and, without presuming to argue upon scientific grounds on the subject, would venture an opinion that many of the "Shor" hills, now far inland, exhibited similar appearances to the Chundra Goops until the receding waters of the ocean ceased to act upon them. Uninfluenced by such causes, they fell into shrivelled and furrowed heaps, bored through and through with cavities like those of the Sharáwaree, which we visited yesterday. The sea is about a mile distant southward of these hills, and a little further to the westward is the projecting point of land known as Ras Koocheri. The last is well laid down to seaward in Captain Haine's chart of the coast; but the hill to the rear marked Goorab would seem to have been mistaken for the rising ground, which, in reality, forms the "Ras," or cape. Gorab, so far as we could understand, is a small detached rock, in continuation of the sea-front of Koocheri.

At Hookee, a portly Hindoo of Beyla, whose dress and equipage denoted a man of comparative opulence, had pitched his tent for the day. He was proceeding with his family to Hinglaj, and though accompanied by riding-camels and domestics, the journey to the shrine was, according to rule, to be made on foot. We saw the whole party start in the afternoon, the old gentleman, staff in hand, trudging along with manful strides in a pair of high jack-boots.

Dec. 27. Hookee to Sungul, 11½ miles.—Pitched camp on sandy soil overlooking the bed of the Sungul, a stream coming down from the hills, near the foot of which we were encamped. Water good from wells dug in this locality. Fodder and forage sufficient for the occasion.

Our road wound along a sandy and tolerably level country, leaving the Chundra Goop Hills to our left. We now skirted an extensive salt-marsh between our line of road and the high and abruptly-rising hill, terminating in the Koocheri promontory; as seen on its south-eastern side, which from this point has the semblance of hard rock, much what its character is found to be on its sea-face. After two or three miles the plain becomes gradually merged in heavy sandy soil. This soil continues for a considerable distance, the ground being dotted with diminutive hillocks of fine sand, each more or less tufted with grass. The smaller ones, however, look the more luxuriant, for the larger often present an appearance of semi-baldness. In spite of the arid soil in which it grows, the grass is liked by horses. It is called in Beloochee, "goorka." Here and there an old shrivelled tamarisk somewhat relieves the monotony. But the eye wearies in resting long on this desolate scenery while attempting to make way through the

country. Between the Koocheri Hill and the track pursued by the detachment, I found myself stopped by the steep banks of the Munjhoonee, a wide mountain-stream bursting out from the great Haros range through the heavy sandy tract dividing these hills from the sea. The average depth to the dry bed may be about 18 feet, the breadth of the river about 50. Its track is made known at intervals by broad fissures in the earth, of all shapes and contortions. Retracing my path to the regular line of march, I soon found the descent to the bed of the stream, after moving along which for a quarter of a mile an ascent became perceptible. About two miles further on is a second stream, the "Vikka," and a little further, among heavy sand-hills, the "Chhota Sungul," on the bank of which our encampment came in sight. From an eminence in the immediate neighbourhood a good view of our actual position was obtained, as bearings could be taken of Gorab and the Nanee Hill, the latter looming in front of us.

Dec. 28. Sungul to Aghor, 12½ miles.—The encampment was among rocks, on hard sand and gravel, on the left bank of the Hingor. Water from river abundant. Supplies procurable from a bunnya, who appears to be stationary here. Fodder and forage sufficient.

Our road after leaving Sungul for the first few miles heavy, through sand hillocks, afterwards among beds of mountain streams. We advance nearer and nearer, upon the long line of black-looking hills, called the Great Haros, running south-west to the sea. Halted for a few minutes at a well at Huddee. The scenery here is striking and picturesque, and becomes more and more so as the pass is approached leading into the valley of the Aghor. After following a course nearly parallel to the great Haros range, the hills in which gradually decrease in height, the path reaches the break disclosing the Hinglaj Mountain, and giving passage to the Hingor River on its seaward progress. This point is our encamping ground.

The range of the greater Haros is bold in outline, and displays innumerable peaks and angles. The general inclination is towards N.N.E. It is screened for nearly half its entire height by a lower range, the intervening valley being peopled by cattle-owners of the Baradee tribe.

The broad river by which we were encamped takes its rise to the far north, and, as I understand, was fallen in with by Major Henry Green in the Kelat country. Its true name is the Hingor, although the word "Aghor," applied to the opening in the hills through which it issues, is often given to the river itself. This outlet is eminently picturesque. In the foreground is the cleft in the sharp steep black hills. About a mile and a half in the background is the "Nanee" mountain, some 1800 feet in height, and presenting a light-coloured scarped front, with a table-land at the summit,

like the rampart of a giant castle. Here we inspected the ruins of an old tower and well in the bed of the river below our camp; but failed to identify the site of a town said to have once flourished in this neighbourhood.

Dec. 29. In Camp at Aghor.

Dec. 30. In Camp at Aghor: made excursion.—Proceeded with Mr. Ryland in the morning to the coast where the south-westernmost hill of the Baras touches the sea. This is called the "Hubb;" evidently (by a misprint) the "Upp" of Haine's chart. After a ride of eight miles, partly parallel with the hill-range and partly near the sea-coast, we alighted and ascended the highest and extreme point. Our trifling labours were repaid by a fine view of the adjacent country.

Immediately below us, at the foot of the inaccessible perpendicular side of the mountain, over the crest of which we peered, at a height little short of a thousand feet, we beheld a broad valley, dotted with conical heaps of pale alluvial soil, stretching from the Aghor towards the ocean, the outlet to the sea-shore being blocked up with low sand-hills. This valley might have been about half a mile in width, and was formed by the range of hills we had climbed on our side, and a long line of parallel "Shor" on that opposite us. Beyond the "Shor" appeared a second range stretching in a similar direction, and terminating in a flat sea-beach, while yet further away was a third line—it might be a fourth—ending in Cape Malan, which projected far into the ocean, forming a kind of bay to its eastern side. To our immediate north rose a high prominent hill, called Ras Goranguttee, Koocheri bearing due east in this panoramic view, and the newly-described Malan, about due west. The result of our observations was that the country we beheld is not likely to be found available for the main objects of our mission into Mekran.

On descending from the heights we picked up along the smaller rocks projecting into the sea many pieces of fresh red coral, while crabs and crawfish appeared abundant; but few shells, except of the commonest sorts, were found. We observed several semi-sheltered miniature bays, in one of which was a fisherman's abode. There is a well of excellent water on the Aghor side of the Hubb mountain, near the sea.

Dec. 31. Aghor to Harrián, 15 miles.—The encampment was situated in the bed of the Hingor, on hard sand, amidst tamarisk and kundee trees. Water abundant and good from river: fodder and grass sufficient.

Our march was through the valley of the Aghor, at the gates of which we had been encamped and halted. The route enters the greater Haros range in a northerly course by the large cleft in the hills, admitting the Hingor as it passes seaward, and crosses the

windings of this river some six or eight times. The passage is here and there attended with some little difficulty for laden camels, especially at night. The last descent was down an abrupt and rocky eminence, somewhat steep. Our followers and baggage were delayed in consequence, but got picked up and brought in by the detachment. The bearings of prominent points from our ground of to-day are as follows:—N. Polkoh, which I take to be the "Nolchon" of Captain Haine's chart; N.W. Goranguttee, a fine hill with long level top—a table-land, in short—averaging, from point to point about 2000 feet in height.

To the eastward were two large hills, of which the more northerly is the "Iogiun," and the other the "Gerrai." Between them is the valley of the Taranch, and the legend has it that a "Djin," or one of the Genii, used to stride across like the Colossus of Rhodes. To the south-westward rose the Nanee or Hinglaj mass of hills, between which and the Goranguttee lay our course on the morrow, the intervening valley being known as the Harrián. We were now in the midst of mountains. The white "Shor" hills had been our constant companions for the first half at least of our march, nor were they yet out of sight.

Lieutenant Campbell and Dr. Lalor having visited the Hinglaj Mountain on the 30th instant, and reported that it was easily accessible from the line of march of to-day, I turned off, about six miles from the Aghor, to do the sight-seeing, accompanied by a Sindee Moonshee, for particulars of which visit see Appendix A to this paper.

Wednesday, January 1, 1862. Harrian to "Shir Koomb," 14¼ miles.—Marched this day to "Shir Koomb," "The Sweet Water-tank." Encamping-ground is on an uneven and confined bit of alluvial soil, closely hemmed in by hills. Grass and fodder barely sufficient: water good and abundant.

The day's march was through the windings of the hill-ranges, especially in the neighbourhood of the Hinglaj or Nanee cluster. We passed west to north-west of the Gerrai and Iogiun, and proceeded along the Harrian valley, the soil alternately alluvial, sandy, and stony; at times through beds of torrents, at others between long streets, as it were, of the pale "Shor Hills." These seem continually to end in *culs de sac*, but are as often found to open out into narrow ravines and valleys, more or less decked with vegetation. The latter consists chiefly of wild oleanders in flower, but thus early half-withered tamarisk and babul trees, and grasses of various kinds were met with.

It is quite certain that this zigzag winding route would be wholly impracticable for troops, except in continued fair weather. Heavy rain would be fatal to the progress of any army, and commissariat

and ambulance arrangements, to be effective, would demand an enormous retinue of followers.

I failed to observe traces of cattle or animal life anywhere to-day, except at our evening encampment itself. Here in the far distance, through a cleft in the hills disclosing the Gerrai heights of the great Nance cluster, arose a sharp razor-like hill, on the summit of which, out of reach of the best of rifles, was descried an ibex. The mountain ranger stood out, a dark attractive speck, in relief to the bright clear sky, from which all clouds had now disappeared.

Jan. 2. Shir Koomb to "Guddhghur," 22¼ miles.—Our camping-ground was dry and tolerably high; soil alluvial, at the base of a high hill of coarse crumbling sandstone. Water barely sufficient: fodder and grass procurable for the day only.

The route lay amid winding ravines and defiles, more or less stony, steep and narrow. Hills bordering on us chiefly of the "Shor" character, but occasionally very hard. At about two-thirds of our course we reached a marked range of flint and limestone, with water at foot in very small quantity, called "Djeykee" or "Djikkee" Shor. A mile or two further the hills became less in size, and in receding opened out a hard crusted plain. The "Goranguttee" stood out behind us, in majestic contrast with its neighbours. It is a noble hill, and seems to me the finest of the Haros and Hinglaj ranges.

Jan. 3. Guddhghur to Munhejee, 19 miles.—This day's march was to Munhejee, the name of a hill-stream or river, finding its way from these hills to the sea. Ground selected for camp lay high, on hard alluvial soil on the left bank. Water just enough for our party, but tolerably good, in a depression in the river's bed: grass and fodder sufficient.

First part of the march lay amid low hills, gradually opening out into the plain country. The road was rough and rugged, and led over many abrupt channels and beds of hill-streams, debouching at length into the bed of the river Munhejee. The banks of the river are about 14 feet high and the bed broad; but the ground is in many parts treacherous—so much so that a horse of our party sank in a quagmire and was extricated with some difficulty. Tamarisk abundant. A long line of hills became visible to the right of our road, following the usual south-westerly direction, their dark colour coming out in strong contrast with an intermediate expiring line of "Shor." These are the Tosuk and Gorud, which issue from behind the Goranguttee and run towards the sea. They would seem to be unmistakeable offshoots from Pottinger's great Brahnikee range. After some 12 miles' travel we sighted to the south-west the abrupt high land of Ormara, presenting a really

novel and striking prospect. It is difficult to comprehend that the full length of this remarkable rock fronts the sea, and is only connected by a narrow neck of land with the shore. It rather looks as though its length were thrown towards the ocean and formed a huge promontory, bathed on either side by its waters.

As we neared our camping-ground other interesting objects came in view. Towards the south-east were observable the higher points of the Butt Hill, forming Ras Malan. To the westward and a little inland or north of Ormara is a white hill, with a lower companion, which is described as a second Chundra Goop, and is said to be in active operation. Further on, in the same direction, are eminences projecting seaward, while behind us there arose on the horizon the Goranguttee and the "Gerrai" branch of Hinglaj, which overlooked our small camp at Shir Koomb.

Jan. 4. Munhejee to Ormara, 19½ miles.—Encamping-ground dry and tolerably high on the sandy soil above the immediate beach, and at the foot of the rock. This is part, as it were, of an isthmus connecting Ormara with the mainland. The water from the well was brackish, but better is procurable at five miles' distance, or by digging a new well at 4½ feet deep. Provisions sufficient, but dear: fodder much as usual.

The first part of to-day's road was along the bed of the Munhejee and the broken ground adjoining. About 7 miles the road crosses the Gorud, a wide river issuing from the range of hills of that name. The further side had about 4 feet of water: the nearer was a swamp. This river runs into the sea, and at its mouth is impassable at high tides, except in boats. About 3 miles further we struck over sand-hills to the sea-shore, and followed the beach-route up to Ormara. In the bay on the eastern side of the rock, called "Demee Zhur" or "Front Waters," is the village, and a little beyond lay our encampment. The eastern bay of Ormara is formed mainly by the rock itself, but may be said to extend to the Butt Hills of Malan. The western bay is similarly formed, and extends to the jutting land called "Kamgar." It is distinguished by the name of "Padee Zhur" or "Back Waters."

Jan. 5. In camp at Ormara.

Jan. 6. *Ormara to "Butt Khor," 29 miles by boat.*—Started at 2 P.M. with Mr. Ryland in a fishing-boat, here called a "battel," in contradistinction to the "matchwa" of Sonmeanee. Reached the Malan about sunset. Proceeded in the direction of the "Hubb" mountain, but anchored at the "Khor Butt," an opening in the rocks leading to the back of the Malan. Could not effect a landing owing to the darkness and swell on the water. Remained at anchorage for the night, the boat swinging to and fro in a manner not conducive to repose.

We passed the mouth of the Gorud, where we observed men and camels, also two "hooros" or "yekdars," *i. e.* fishermen, who are "Sangore" Beloochees; their chief, Dost Mahomed, residing at Kedj. Next passed the mouth of the Munhejee, perhaps a mile west of the Butt or Malan. The latter commences on that side in low white hills, like hard "Shor," at the foot of which is a fine broad beach. These are succeeded by high and comparatively square-topped or regularly sloped hills, subsequently decreasing and then rising very high again. The beach appears good so far up to "Khor Butt."

Jan. 7. *Pittoké, &c., and back*, 12 *miles.*—This day we landed and pitched our small rowties on the beach, after which we proceeded up the "Khor," a broad salt-water inlet, doubtless fed by some mountain-stream higher up. We felt disappointed at not finding a practicable high hill from which to see the Hubb and intervening country. Walked in the afternoon some five miles eastward, to the last point of the "Ras," practicable for a beach-line of telegraph.

Jan. 8. *Valley of "Khor Butt" and west of Malan*, 6 *miles.*—Walked 6 miles westward on the Malan beach, and pulled up at the dwelling-place of a Beloochee fisherman, whence we sent our boat to Ormara, with a note to Lieutenant Campbell to despatch camels to enable us to inspect the back of the Malan and discover, if possible, the passage at the "low spur," mentioned by Major Green.

Jan. 9. To "Khor Butt," 13 miles.—The camels not having arrived in the morning, we walked about 3 miles to the extreme west of Malan, thus completing a foot inspection of the whole practicable part of this beach. It may be considered for the most part wide and good: but there intervene here and there certain narrow and difficult spots, where, at high tide, the passage is made over masses of huge stones thrown together by external influences, and presenting an obstruction as effectual as the solid rock itself. These obstacles are not frequent for the first 9 miles; but, upon mature consideration, I doubt whether the Malan beach is well calculated for telegraph posts and wires. The sandstone cliffs or rocks, whatever be the term applied, are crumbling and brittle. The morning we landed at the "Khor Butt," a detached portion came rolling down with violence enough to have done great and serious damage to a telegraph-line. At the same time, if the wire could be brought from the Aghor to Pittoké, I would unhesitatingly recommend that it be continued by the beach-route to Ormara. From Pittoké, where there is a small supply of good water in a cleft, and at foot of the hill, up to the western point of the beach, the rain is found collected in the depressions called

"abdars" at sufficiently convenient points, and this distance may be fairly computed at 14 miles.

Walked back to our small rowties, disappointed at seeing no sign of the camels.

About midday we were joined by our camel-drivers from Ormara, and started off in the afternoon. Retracing our steps through the Khor Butt to the back of Malan, we pitched our tents that night about a mile or so inside the Khor—our course from the mouth of the Khor was north for nearly a mile, then north-east and east; encamped under the Darabund part of the Sir Butt Hill on the bank of the river. Soil sandy and alluvial, ground uneven; water, fodder, and forage abundant, as is often the case in the deep recesses of these khors, or sea-ravines.

Jan. 10. From Khor Butt, 8 miles, N.N.E.—Started off in the early morning and pursued a somewhat zigzag course, following the windings of the Khor. In about 6 miles, emerged into a tolerably plain country. The passage was a very difficult one, so that we had to do a great part of the way on foot. About half-way up the ravine, we came upon a naturally-formed tank, called Pittoké, into which water was plentifully trickling out of the steep stone sides. The rocky walls protecting this really fine reservoir of pure deep water might have averaged 25 feet in height, and wild grasses and plants grew luxuriantly around.

We put up for the day at an "abdar" at the foot of a hard sand-hillock at the outlet of the Khor, north, whence we moved on another couple of miles to the eastward, to be nearer our work on the morrow.

Jan. 11. *East of Malan and back*, 14 *miles.*—Left in light marching order to continue our explorations. About a mile out, we pulled up at a Beloochee "hulk," which word may be interpreted as the "abode of human beings," rather than the approved translation to "village." There we picked up another guide, but I cannot resist making a pause in the Diary to draw a picture.

About 2 miles N.N.E. from the Khor Butt, where this river intersects the great Butt mass of cliffs better known by the general name of Malan, is a Beloochee "hulk" or settlement, of which the head is Aziz. The tribe to which he belongs is the Bezunjo, but by being a Brahni he is not a whit less a Beloochee. He is an inhabitant of the coast, or of what Quintus Curtius calls the maritime parts; and this fact seems to stamp his nationality. These Beloochees want certainly as little here below as any men. They clothe themselves in the coarsest of garments, and eat the least dainty of fares. They have no houses or huts worthy the name, and a shower of rain may drive them from the tree they have chosen for shelter. And yet there are some among them who look

happy and contented, almost sleek and well fed; of this number was our friend Aziz. His age may have been fifty; his face was round and merry. He had a bright twinkling eye, a well-shaped nose and mouth, and a respectable grey beard and moustache. His dress was a coarse cotton blouse of a yellowish brown colour, and his "shalwars" or loose trowsers were of the same material, but dark blue. When he needed a waistband, he tied around him a wisp of "peesh" grass; and when about to travel, a stick, a knife, and a pair of peesh sandals completed his equipment. He had two wives, one childless and away, one with her two sons and a daughter at home. These last tended the flocks and herds, or carried on the daily routine of domestic arrangements. One of his sons was married, and one a mere boy. The daughter was still single. Besides these there were three or four other relations, male and female, forming the "hulk." Folks in England would suppose from seeing this family, with smiling faces full of ordinary human intelligence, that at least they slept in beds and under roofs, if they did not eat with knives and forks. But no! A tamarisk or dwarf babul, with one or two pieces of matting, was the house, and, where the clothes wrapped around the sleeper were insufficient, a piece of felt or goat's-hair cloth was the bed. The food was the common red "jowaree" mixed with water into a kind of stir-about, with coarse and indifferent dates and salt-fish. It must be added, however, that they had very excellent goat's milk, and this, no doubt, was turned to good account. They had camels, small but smart; sheep, white and fleecy; and fine long-haired goats of all colours and sizes.

It had been agreed, on the previous evening, that we should take advantage of the presence of Aziz in our neighbourhood, to secure his services for our day's expedition. We accordingly alighted from our camels when arrived at his dwelling, and awaited the relief of guides. But Aziz had certain rites of hospitality to perform, with which he could in no wise dispense, and we had to bide his pleasure. These finished, he tucked up his garments and took his seat on the camel. There was a little coquetting at first on his part, as to whether he should ride or walk, but his "better-half" issued her fiat in favour of the former, and he dared not disobey. To see the "hulk" turn out and look at its headman driving a European stranger was not unlike, in its way, the sight of Mr. Briggs proceeding on his first hunting excursion. The matron just allowed a smile to penetrate the cloud of anxiety which had gathered upon her features, the younger women could not conceal a laugh from beneath their clumps of nose-jewels, the men and children stared, even the little kids seemed to feel that there was something unusual going on, and frisked about with an expres-

sion of blank wonder on their innocent faces. At last off we went, and it was not long before we were on as intimate terms with our new guide as with the best of his predecessors.

We soon lost all traces of the plain country, and were threading partly on foot through steep stony defiles and partly on camel-back through beds of winding streams, the rugged irregular hills studding the northern side of the Sîr Butt, and leading to a pass on the Hinglaj-road, called the "Buzzi," or "track of goats." At about midday we halted at an "abdar" or pool at foot of a hill, boiled some water, and breakfasted. The rain came down in one or two light showers, and as more threatened we had no time to spare. Leaving our camels, we turned off from the "Buzzi" to ascend a high point to our right, from which Aziz informed us we could see the lower country east of Malan.

Aziz was right. We followed the track indicated for about a couple of miles, losing trace of every footmark but that of a stray panther or cheetha. Our ascent was, for the most part, gradual. At length, from the top of a low-crested hill above which towered loftily the north-eastern extremity of the Sîr Butt, we looked down upon a confused and intricate mass of "Shor" hills and hillocks enough to perplex the most scientific engineer. Aziz had after only to go about 5 miles in all, and about sunset we restored him to the bosom of his family. The old man was received with evident satisfaction. He was somewhat tired, and had worn out his pair of sandals by the rough walking. His legs had, moreover, been well exercised in the jerking heel-movement used in urging on a slow camel.

Jan. 12. Ormara, 35 miles.—A very long and tedious day's journey across a plain country behind Malan, gradually leading into a series of winding passages and defiles among low rugged hills on the north-west of this mass. Reached the sea-shore by the mouth of the Munhejee near midday. Here our boat had been expected, but the weather being stormy none was visible. We accordingly halted for two or three hours, and set out afresh in the afternoon, walking to the Gorud River. This we crossed in a canoe, the camels being led round by a shallow passage on the sea-beach. Hence to Ormara, about 11 miles, we made the best of our way on camels, arriving about eight o'clock at night.

Jan. 13. Camp at Ormara.—A very heavy storm during the night from the eastward, so violent that some of our tents came down towards morning. Rain continued for the greater part of the day. One or two boats were injured, and the sand isthmus on which the town was built was nearly cut through by a new-formed channel.

Jan. 14. Still at Ormara Camp.

Jan. 15. Still in camp at Ormara.—This place consists of

about 300 houses, and the number of inhabitants may be reckoned at about 900. Of these 150, or half, may be estimated as fishermen and boatmen, called in Sind, Mullahs and Mohanas, and here "Maids." The dwellings are formed of matting fixed to poles, not one mud-building was to be seen. Besides the Maids, there are Mehmans and Khwojas, and Hindoos of the Lohana division. The language is Beloochee. The inhabitants live chiefly on fish and dates.

The distance hence to Kolwa is five stages, perhaps about 80 miles; to Pussnee 82 miles. I was sorry not to have had an opportunity of visiting the upper regions of the promontory, as the air is described to be purer there and the water better than that found in the brackish wells below. It is about 650 feet in height at the base, or what from its shape may be called the joint. At the point, or cape itself, it is not more than 300 feet.

About 10 miles in a northerly direction, are two connected hills of the mud-volcano class. They were visited by Dr. Lalor and Lieut. Campbell.* One is described as having been recently active; the other fallen into decay. The general appearance was much that of the Chundra Goop near Hookee. At Churr or Kelat Pinnee, about 5 miles off, are wells of good water. There was formerly a fort there.

Jan. 16. Ormara to Bussole, 20 miles.—Our camping-ground was on sandy soil on the left bank of the Bussole River, but at a mile distance from the main stream; water plentiful, but muddy. Fodder and forage sufficient. Inhabitants scattered here and there.

Our march for the first 5 miles lay along the shores of the Padee Zhur, or West Bay of Ormara; then in a northerly direction, and afterwards north-west towards the long line of hills observed to our right as we marched from Munhejee. Left to seaward the Kangar and Seémin or Djungosh hills, comprehending the Gurkee Valley and Kundi Lakk, and passed over the wide sandy plain intervening to the Bussole River and mountains beyond. Turning the inland range before mentioned, we found at their extremity the Tullo, a conspicuous hill, sometimes called Bussole, from its proximity to that stream. Observed a small white hill, like a "goop," at an inland angle of the sea hills. During our march we crossed two or three swamps caused by late rains, with which exception to-day's route was an easy one. A fine view of the Goranguttee, Nanee, and Butt hills opened out to the eastward as we passed over one of these sheets of low water.

The Bussole River is now, with the exception of its main stream,

* *Vide* Appendix C., p. 209.

a series of mud channels, difficult of passage, and though crowned with many stunted trees, by no means picturesque. It falls into the sea near the Soonnie rocks.

Jan. 17. Bussole to Kurghuree, 14½ miles.—Encamped on hard ground, gravelly soil, covered with broken pieces of gypsum, washed down the bed of a stream close beside us, called the "Khwaree." Water, forage, and fodder sufficient. Inhabitants in the vicinity.

First part of to-day's road lay over canals running from the Bussole River, and indenting the ground in irregular lines towards the sea; then over tolerably dry alluvial soil to the bed of the main stream, which we found broad, and containing some three feet water. The state of the lower road causing it to be reported impracticable for laden camels, we kept to the neighbourhood of the hills, of which long lines still rise to the northward, now taking a more westerly and less direct course seaward, and disclosing a broad valley between those ending at Tullo or Bussole, and the more distant parallel ranges running towards Pussnee (our second station in advance). After some few miles over sandy soil, alternating with alluvial, we came to ground under cultivation, or bearing marks of recent crops. This land is called "Djiafferee," or "Djaparee," and receives its nourishment from rain-water. The wheat was very scanty and backward, not being a foot in average height. A little further was our encampment, near a hill separated from the main range, named Kurghuree. There are numerous low ridges of flat-pointed and conical hills in the neighbourhood, similar to others met with on our line of march. These are of sand, more or less hardened, with iron and other metalliferous formations cropping out. Far behind us stood out the rocky promontory of Ormara, the back of which exhibits its singular jointed shape, at the point where the neck of the isthmus forms its double bay, while to the south-east is the mass of rock whose front is shown on Haine's chart as Ras Bussole and Ras Soonnie. It is perhaps to be regretted that the rain kept us so far from the sea-coast and Kulmut; but a fair idea of the line of country required is obtained hence.

Jan. 18. Kurghuree to Koondree, 15 miles; *to Kalmut and back to camp*, 26.—To-day's camp was on hard dry sand, and alluvial soil, at the foot of and about a mile from the hills; the water supply from the Koondree stream running from the hill of that name, where there is said to be an unfailing tank. Grass and camel-fodder sufficient.

Our march was at first over sandy and stony soil, cut up and intersected by numerous channels of hill-streams; among others the Mukola, a wide opening in the rocks admitting the waters of several

rivulets, or one river, according to the influence exercised upon it during the rainy season.

Having observed some palm-trees at about 8 miles' distance in a southerly direction, which they told us was Kulmut, Lieutenant Campbell, Dr. Lalor, and I proceeded thither: our horses were to follow. The trip was somewhat fatiguing, owing to the extensive salt-swamps we had to cross, and circuit necessitated by the intervention of the Hurmalee Khor, a salt-water creek communicating with Khor Kulmut. Our horses did not overtake us as arranged. For about 14 miles we trudged along on foot, until we reached the sand-hills abutting on the sea-shore, and the spot first marked out in the distance for our intended destination. A fort of about six feet square, built of stones cemented together, and now encased in innumerable shells, very filthy inside, and divided off by a loft or upper story, and a couple of wells, sheltered by fifteen palm-trees, rewarded our labours. We got there a refreshing draught at least, and ascertained that the place was the genuine original Kulmut, but Kulmut Bunder and Khor Kulmut were further on. It was too late in the day to attempt more explorations, and we had a long way to return to camp, to say nothing of the heavy mud called "ligitch" to wade through, so we unwillingly retraced our steps. Fortunately for us we were met by the horses, a mile or two on the homeward route, and we managed to get back before night had quite set in.

Jan. 19. Koondree to Kundi Shor, near Barangoli, 20½ miles. —Our bivouac at Shor Kundi was on hard alluvial soil, at the foot of the "Shor" hills, which here intervene between the higher darker range and the sea. Water from the "Shori" stream good. Forage and fodder procurable. Sea about half a mile distant.

At starting we skirted the hills towards the sea-coast, over stony and gravelly soil, occasionally crossing the edge of a salt-marsh; thence past the large Shor-Sheb hill on our right, whence a branch strikes off to westward; also the Shori-Drikkolo on the left. Connected with the last is a legend of a serpent and treasure. About 14 miles the road traverses low hard sand-hills, which gradually narrow into a small defile of about half a mile in length, leading to a sandy plain country. Four miles further on, turning the point of a projecting cape-like hill, we came upon the Roombra River, possibly the Rhumberries of the ancient geographers: its bed is stony, with salt-water channels on either side. Crossed at a shallow part, and passed through some hillocks on the further side to a hard alluvial flat, a mile's marching on which brought us to camp. We are separated from the sea by low sand-hills, intersected by a salt-water creek running parallel to the beach. It occurred to me that for the last mile or two the actual foot of the hills was lower

than the sea, which seemed to rise above us on our left. Passed to-day a hut at foot of the higher hills, said to be the shrine of Abdul Rahma Pîr, of the Sangores.

Jan. 20. Kundi Shor to the Shadi Khor, 17 miles.—I started on foot with Mr. Ryland early this morning, and struck up the Barangoli river inlet. After winding among the low Shor hills discovered a passage to the sea-shore, which we followed up. Walked and rode along the beach for some seven or eight miles, and halted at a pool of rain-water. After some refreshment, remounted and continued the march to the end of the line of hills, which became at last nothing but low "Shor." Passed a jutting hill, called the Beddoke, where the beach becomes very narrow, and from which to the Roombra there is formed a kind of lesser bay. The Beddoke range is succeeded by the Noonaro Hills, of white hard sand, all offshoots of an interior range. In front of us is the rock of Zarrain, terminating a projection of sandy land, on which is Pussnee. The Zarrain is flanked to the eastward by a low straggling hill of "Shor," and may be said to form the western extremity of a large bay, the eastern arm of which approaches the Roombra. At the western end of the Noonaro, we ascended through a low pass to the country inland. Crossing a broad mountain-stream, called the "Shadi Khor," and encamped on its farther or right bank, about 3 miles north of Pussnee, the fort and huts of which town are visible. Ground high, hard, and stony, near a mass of hills covered with gypsum. There is much sulphur procurable at Golkurt, near last Friday's encampment at Kurghuree.

Jan. 21. Shadi Khor to Pussnee, 3 miles.—Encamping-ground on sandy soil, north-west of the town, which is situated just above the sea-beach. Water brackish from the well, but tolerably good if brought from the Shadi Khor, at a distance of 3 miles. Grain very scarce. Forage and fodder much as usual. Supplies not procurable. There are in all about 70 houses in Pussnee, built, like those of Ormara, of mats held together by poles. There is also a mud fort, with two mud houses, connected by a low mud wall.

Jan. 22. In camp at Pussnee.—Walked with Lieutenant Campbell to the Zarrain Hill, distant about 4 miles, ascending which we obtained a good view of Ras Shemal Bunder to the west, and the country we had left to the eastward: the ascent and descent were both somewhat difficult. At the foot of the Zarrain is a curious little hillock, in shape like an inverted teacup, quite encased in sea-shells. Afterwards we saw a boat return from the island of Ashtola, or Haftola. Some Arabs had been there in her, and returned with sharks' heads and other prizes. This island we had observed at the Barangoli, and had purposed paying it a visit, but the scarcity of provisions and badness of the water caused us to

hurry our departure from Pussnee. We were unable, however, to start this evening, as fresh camels had not been obtained in sufficient number.

Jan. 23. Still at Pussnee.—The road hence to Kedjé is divided into three stages; distance about 70 miles.

Jan. 24. Pussnee to Goaranee, 9½ miles.—This encampment lay on sandy and alluvial soil, caked with sea-shells, and nearly surrounded by low sand-hills, about 4 miles from the sea. Water from late rain collected in hollows; at other times procurable by digging a well at three or four feet. Forage and fodder sufficient; wood scarce. Our route crossed salt-plains and sand-hills, the latter covered with lanee. After a time we opened out new long ranges of hills, extending from the Shadi Khor to the west and south-west.

Jan. 25. Goaranee to Koonbee, 19 miles.—We pitched our tents to-night on sandy alluvial soil, at foot of the Koonbee Hill, near some rain-pools and babul-trees. Forage and fodder sufficient; water muddy.

Very heavy rain during the night having caused the return of our camels and baggage, we deferred our departure until this morning, following our baggage-camels at an hour's interval. The direct road to Koonbee being impassable from the "ligitch" or clayey ground, we had to make a long circuit by the sand-hills on the sea-side. A second circuit was consequently necessary to enable us to cross a rapidly-flowing stream, called the Shinzanee. We have now approached the ranges of hills opened out yesterday, from which the "Koonbee" is detached. The "Talar Bund" seems to be the designation of the highest and farthest of those visible on this day's line of march. They are marked by a lower line rising gradually from the plains, parallel to them, topped with the usual peaks, and inclining inwards. Did not reach camp till after sunset; soil moist, and heavy dew at night.

Jan. 26. Koonbee to "Lukkair," or "Kurreer," 16 miles.—Bivouacked near low sand-hills, on sandy soil, covered with low sprouting grass, under a "tope" of scattered date-palm trees. Water obtainable here from depressions lately supplied with rain. Forage for horses ample; camel fodder sufficient.

The sea-route being impracticable, independently of the "khors" or creeks receiving the rain-water from the hills, by the intervention of the long line of rocks shown in Haine's chart as Ras Shemal Bunder, Ras Sheid (or Shahid), and Ras Koppah, we passed to-day through the low country between these and the Talar ranges. Entered a low and easy pass through the Koonbee, debouching into a plain on the western side, while to our immediate right extended a continuation of the lower inland range of hills previously mentioned, called here the "Kundi Shor." These in time are separated

from us by a row of irregular "Shor" hillocks. Ahead of our line of march is the high land of Durram, which seems to form part of one of the ranges before mentioned. Passing the palms of Shuttungee, and two minor streams from the hills, we came upon a formidable river, with a deep rocky bed, named the "Savuru." This is formed by the junction of hill-streams with a long salt-water creek, and though easily fordable for footmen and horses (provided the ford be known), is difficult for laden camels. After crossing this, we met some men returning from Mecca to Lahore and Dehra Ismael Khan. They had crossed from Massat to Chonbar, and had proceeded from Chonbar to Gwadur, and so on. There were signs of cultivation near the Savuru, a patch or two of jowaree and ploughed land. Inhabitants, moreover, were visible on our route, and numbers of grazing camels. There were two small streams, the Chellanee and Nullet, on the further side of the Savuru. It appears that these minor streams, although following a different course from the hills and through the plains, fall into the estuary of the last-named river. This "khor," or estuary, is to the east of Ras Shahid, the river itself rising between the Kundi Shor, Gwundi Nigoor and Chellanee hills. There is no town known as Koolaj, mentioned by Pottinger, but I note here the following "Abadees," or settlements:—

On the Seaward side of the Hills.	On the Inland side of the Hills.
Chukkoolee.	Sir Dusht.
Koonbee.	Nobeor. (?)
Ghuttangee.	Hulluk.
Kundi-Shor.	Chellanee.
Mahomedi Beel.	Beylar.
Koppah.	Barn.
	Nullêt.
	Bandoloo.
	Gwundi Nigoor.

Jan. 27. In camp at Lukkair.—We had intended to send on baggage this afternoon, but travellers from Gwadur give an unfavourable account of the road. We therefore resolved to let our camels have a clear day's forage, and to move on the whole camp to-morrow.

Jan. 28. Lukkair to Barumba, 15½ miles.—To-night's camp lies high and dry on sandy soil. Fodder and forage scarce; water from river indifferent.

For the first 8 miles my road was hardly that of the detachment, as it was my wish to examine the sea-coast at the west of Ras Koppah. Started off with a guide accordingly in the direction of the sea. Country level and sandy, with occasional patches of swamp, intersected by beds of mountain-streams. Observed here and there "buls," or clumps of trees nourished by irrigation: these are either palm or babul. Came up to a mass of "Shor" hills,

adjoining Ras Koppah, forming a prolongation to the westward of the line of rocks in Haine's chart. Here I left the camels, and proceeded on foot. Found a passage leading to the sea-beach, but so narrow and difficult, and withal so full of water under foot, that we were unable to reach the outlet. Took to climbing, however, and managed to get to the brink of some "Shor" overlooking the sea, at a perpendicular height of about 40 or 50 feet. The receding tide showed a narrow beach, partly covered with heaps of white rock fallen from the Koppah side. Returned to the camels, and passed one or two Belooch "hulks," at one of which I pulled up, and accepted the invitation of the Kurmuttee head of the family to sit down on his mat and partake of his milk and dates. From the information here obtained, the coast of Shemal Bunder and Shahid appears generally impracticable for purposes of transit, though traversed at low tides by foot-passengers, such as the "Padees," *i. e.* fishermen who have no boats, in contradistinction to the "Maids," or boatmen. Rejoined the line of march at the commencement of the Khwewat "bédring," or defile, a pass leading, for some 6 miles, through hundreds if not thousands of "Shor" hillocks, with which the whole country is here studded between the high land of Durram and the sea, beside which our course now lies. This channel is fed by the "Siree Kásigan," the "Cheri Kásigan," "Djulai Khor," and "Rodence," at which latter junction it finds its way to the ocean. We now reached a higher ground, and a mile or two further on the Bannuba River intervenes. In this there is not much water, though the bed is tolerably broad. Its estuary receives the waters of the Khurwat, and on its right bank is our encampment.

Jan. 29. Barumba to Gwadur, 20½ miles.—Our camp was pitched to the north-west of town, near palm-trees, on dry sand. Here we found supplies of all necessary kinds, and abundance of good water from the wells.

To-day's march was fatiguing, owing to the rain, which had continued more or less the whole night. The track led over sandy soil, with occasional swamp. About 2 or 3 miles after starting, reached the sea, and kept the shore for some 7 miles, when the road turns to the right and skirts the Maidee Hill. This last is a remarkable object: it is of white clay, little different from many of the ill-looking "Shors" in composition, but presenting singular and beautiful features. A summit, half-domed, half-spiral, rising to a height of little less than 500 feet, gives to the massive scarp whose level top extends in a long line about 100 feet below, the appearance of a groined architectural monument of the middle ages. More ecclesiastical than baronial in character, the fluted rock might be imagined to represent in one spot the carved narrow interior buttresses, in another the large pipes of an organ within

a cathedral. The cessation of the heavy rain, and the dispersion of the mist which had hitherto obstructed our view of this peculiar hill, made the effect greater than words can describe.

Scarcely, however, had we reached its foot ere our road again descended to the sea-beach. On our left we passed a small but abrupt wall, jutting out into the ocean, called the "Soor." From hence to Gwadur our march was by the sea-side, the waves every now and then washing the horses' feet. The distance to Gwadur might be another 10 miles from Maidee. With the exception of a mile or so during which there is still a white irregular cliff beside us, there are low sand-hillocks or gently rising ground all the way on our right hand.

Gwadur itself, as seen in front, is a repetition of the Omara rock, though less regular in detail. It projects far to seaward, and forms a series of sheltered bays, of which the most marked is that whose eastern shore is the Maidee Hill and "Soor." The town is built on a sandy isthmus, and consists of mat-huts and a stone-built castle, whose square tower is not unlike that of a village church at home. It looks populous, and teems with life.

From this point the expedition returned safely by sea to Kurrachee.

APPENDICES.

(A.)

Among the strange sights witnessed during our journey along this wild and barren, but not uninteresting, coast, perhaps the most notable were the temple of Hinglaj and the mud volcanoes near Ormara; in describing which I shall confine myself to extracts from my diary.

Quitting our route just beyond Aghor, I proceeded with two guides up a narrow valley to the left, not many hundred yards up which we dismounted and left our cattle. A walk of about a mile up a not very steep incline brought us to the Assa Poora, a bed of a stream now dry, where visitors and pilgrims usually encamp. From this point we moved along the track of a stream distinctly bisecting the hill, and stopped half a mile further on our left to observe the place of sacrifice. The hollow in the hill visible hence was smeared with the blood of slaughtered animals offered to the goddess Kalee; the remaining space was filled up with the red hieroglyphical signs of the "Tillook." From this place to the temple itself many of the stones under foot were stained with blood. There had been evidently a recent offering. It appears that a Mohammedan butcher is hired for the occasion: the pilgrims themselves not objecting to eat the flesh of the sacrifice. About a quarter of a mile higher up the hill is the great centre of attraction, quite surrounded by the mountain-crests, now gathered somewhat closely around.

The temple of Hinglaj boasts of no architectural magnificence or beauty. It is the sort of thing that an infantine taste for architecture would create out of wooden toy-bricks. But its appearance and site are in good scenic effect.

The huge hills are not wanting in cavities and charms; and in a cavity to the left, as the traveller moves upwards, far deeper and more confined than the sacrifice hollow, is visible, surmounted by a long arch of pale sandstone, the so-called abode of the Mare or Nanee, the presiding goddess of the place. It is a low, castellated, mud edifice, with a small wooden door. A little beyond, but adjoining this building, is seen a flight of steps leading to a second similar cleft, but deeper and less artificial.

Close by the entrance and amid the rocks, is a cheerful pool of water containing fish, by the margin of which a species of wild oleander grows to a considerable height. I believe this to be the "Jaur" of Sind.

We entered the building with curiosity, stooping to accomplish our purpose, but there was little or nothing within to attract attention. The room seemed rather intended for the bestowal of pilgrims' baggage than for any avowed religious object. But the second door to which the inner steps led was evidently but the threshold to the penetralia of the temple, and here we found the shrine of the goddess, the Maha-Mare or Nanee, the great mother (or grandmother). Two diminutive domes, one at the head and one at foot of a short, tomb-shaped mud erection, marked the chosen sanctum of this divinity of the Hindoo mythology. A wooden rail had been set in front and at the sides. Some rods, steeped in *soondur* dye, were placed near the wall at the back. These were intended for the use of pilgrims unprovided with the wand of office borne by their agwas or leaders. A large bunch of high feathers was on the opposite side. The shrine was on a kind of raised mud platform, perhaps three feet from the level. On either side was a door barely large enough to admit a middle-sized man creeping in on his hands and feet. The proper thing to do was to enter the door on the left, grovel along on the chest and stomach to a hollow in the rock where there was room to stand erect, and resume the creeping position until egress was obtained by the door on the opposite side, thus completing a semicircle. A practical illustration of the performance of this feat was afforded by one of our guides, and the moonshee followed his example. I did not find sufficient inducement to follow suit, besides which, had I failed, the fact of failure is attended with the imputation of being burdened with offences too weighty for removal, and the moral effect of such an exhibition would have been, to say the least, personally disagreeable.

(B.)

A brief notice of the mud volcanoes may not be out of place. These appear to be of the same formation as the white hills called "Shor," of which there are many ranges on the coast, and which crop out of the earth in strange contrast to the darker lines of rock before and behind them. We visited some at a place called Hookee, near which we were encamped. The locality may be identified by a point a mile north-east of the rock marked Ras Koocheri. Three hills, or hillocks, were observed here of light-coloured earth. That in the centre, the highest, had a smooth and clear appearance, with a dark edge around its flattened crest. The hill to seaward was rather more rugged, but not dissimilar in general outline: it was connected by a ridge to the first named; in fact, they might be taken for cones or peaks of the same hill. The third was comparatively low, and was much more furrowed than the others. We inspected the basins of the two first, and found them full of liquid mud, and in action. We observed nearly the same process described by Captain Hart in 1840. At short intervals bubbles rose on the surface, varying in size and power, accompanied by a slight gurgling noise, but affecting only the immediate sphere of operation. The Hindoos look upon the phenomenon as supernatural, and consult the "koop," as it is called, as though it

were an oracle of old. The Mohammedans, on the contrary, have a theory that the working of the volcano is affected by the tides.

There are several stories told of the origin of these hills. Captain Hart had heard that there were eighteen in all—seven in the neighbourhood of the Aghor, and eleven between Kedje and Gwadur. He takes them to mean the "koops," or basins, of Ram Chundra, but a different interpretation was given me. One of my informants set forth that there were no less than eighty-four, and that they sprung from eighty-four parts of a ball of ashes, thrown to the ground in a paroxysm of anger by Siva. Our party traced, I think, no more than seven, of which four, at least, were in action; but many more were passed which had the semblance of extinct volcanoes.

One was met with, a mere cone, a few feet above the earth. This, combined with the similarity of shape and appearance generally, has led me, humbly and unscientifically however, to suggest comparison of them to the *volcancitos* of New Grenada described by Humboldt. Of course, allowance must be made for the difference in size and mode of escape of air.

(C.)

I think it right to point out the palpable errors in such maps as I have now before me for reference, although the information now acquired brings but a small portion indeed under review. It is quite clear that Lieutenant (afterwards Sir Henry) Pottinger's map of 1814 has been taken as a guide in the preparation of later maps, which include the geography of the Mekran Coast. But by the lines shown in this, the particulars of the land route between Kurrachee and Gwadur recorded, have been obtained from reports from natives who have traversed it, and not from personal inspection or survey. The existence of inaccuracies cannot therefore be considered surprising. The Hubb should find an outlet at Cape Monz itself, not at a point half way between that Cape and Sonmeanee. There is no place called Hingoor, west of the Aghor. Hingoor is rather the proper name of the Aghor itself. Cape Urboo is wholly misplaced. There is no ground to be found; none certainly so near Harriana as shown, nor is there a river called Mukloo at all, on the east of Ormara. The first may be intended for the river "Gorud," and the Mukloo for Makola, a mountain stream flowing into Khor Kulmut, far to the west between Ormara and Pussnee. There is no island called Arboo. The Suduk river must be a mistake for the Shadi-khor, but Pussnee is on the western, not eastern side. The district of Urboo I have been unable to identify. That of Koolach lies between the Shadikhor and Dusht river, very nearly as shown; but there is no town of the name, as might be supposed. The black line of hills marked as a northern boundary to the maritime parts of Mekran, gives no idea of the country through which we passed, where the ranges almost invariably run from north-east to south-west, or to seaward, and sometimes dip into the sea.

Arrowsmith's. This map seems to have been taken from Pottinger with the information supplied in Haines' chart of 1829 added. The latter, as a chart of the coast, is of great value; but it is naturally deficient in the number of khors or river creeks, and other particulars appertaining to a minute land-survey. Two inland mountains entered in it as "Nolchon" and "Jubbel Lucle," I have been unable to discover, except they be, as their position would infer, the "Pol Koh," near Hinglaj; and the "Dewo Koh" or "Din Koh," of the greater Haro range. The Roombra is made the same as the Kulmut, whereas in reality the two rivers are far apart. In like manner we see river "Muckloo" or "Hingool" placed between the Bussole and the Aghor. Now, the Muckloo, if meant for the Makola, cannot be the Hingool; and if there be a river called the Aghor at all, that river must be the Hingool. There is no

attempt to define the hills; but the few names of halting-places or rivers are not always correct. There is no Hormara on the east of Malan, nor any Bussole river east of Ormara, as entered in this map.

(D.)

THE information obtained by me at Gwadur, as to political boundaries, may be thus summarised :—

Up to Ras Pishkan extended the Imam's territory of Gwadur. This was measured with the perambulator and estimated at 25 miles.

From hence to beyond Jeonee, the narrow slip of country was the Khan's, held by a certain Abdul Rahman, Shadeezye or Sheikhzada, for the Kelat State.

From a point somewhat west of Jeonee to Bris, Deen Mahomed and Mahomed Ali, Jadgahs of Baho, were the acknowledged chiefs, paying, however, an uncertain tribute to Persia. Baho and Gwettur were in the hands of Mahomed Ali, and Dustyaree was Deen Mahomed's.

From Bris to Tej was the land belonging to Choubar, held by a deputy of the Imam of Muscat. The Imam's right was the right of conquest, and the tenure was independent of external control.

From Tej to a point between Rabje and Zegin the country was held by Meer Abdullah, Chief of Gaih. This person is a Gitchkee Belooch. He is son of Morad Mahomed Gitchkee, by a Boleida mother of Kussurkund. I have reason to know that he is not a contented tributary, and is most desirous of entering into correspondence with the British authorities on the subject of his grievances.

The remainder of the coast to Bunder Abbas is farmed by the Imam from the Persian government.

At the end of May, 1861, Major Henry Green, political agent at the court of H.H. the Khan of Kelat, touched at this port of Gwadur in the steamer *Hugh Lindsay*, and remained there for some hours. In his Report to Government he describes the place as "situated in longitude 62° 15′ 40″ E. and in latitude 25° 6′ 40″ N, about 300 miles W. of Kurrachee, and 400 E. of Bunder Abbas. The harbour, or rather bay, is easy of entrance at any season, having no bar, and being protected from the S.W. monsoon by a range of nearly perpendicular rocks between 300 and 400 feet high, running nearly E. and W. for a distance of 1¾ miles into the sea, thus forming a perfect breakwater against the swell caused by the S.W. monsoon, and under the protection of which vessels drawing up to 18 feet water can anchor in 4 fathoms in perfect safety. Should the wind come from the S.E. a vessel has only to run round the head of Ras Nao, and anchor in 6 fathoms on the N.W. side of this range. It may here be remarked that the S.W. monsoon seldom blows home on this coast, but nevertheless causes a high and dangerous swell; the rise and fall of the tide is between 3 and 5 feet. The village of Gwadur is built at the foot of the range of rocks above mentioned, which abruptly terminate at their western extremity; the whole extending only 3 miles. It is here met by a sandy beach. Outside the village are pitched the camel-hair tents of the migratory tribes of Belooch, who come from the interior bringing sheep, wool, carpets, ghee, and dates."

Major Green further says :—

"On ascending the range of hills at foot of which the village is situated, I found on the summit a curious natural reservoir for water, of large extent, with a most scientifically constructed stone bund, for the purpose of preventing the water from escaping down the eastern side of the hills. Feeling convinced that it could not have been constructed by the present inhabitants, I made

inquiries, and was informed that it had been built in former days by Feringhees, by which I am led to suppose that the Portuguese were intended, and that in all probability, when they possessed Ormuz and other ports in the Persian Gulf, Gwadur was not neglected by them, either as a trading port or as a harbour of refuge during bad weather. . . . . Several old tombs were also shown me as having been built by the same people who constructed the bund."

The reservoir on the hill spoken of by Major Green is well worth a visit. The stone bund is even now, to a certain height, in tolerable preservation, and if not removed by human hands, is likely to remain so for another century or more. It is about 100 yards in length, and joins two jutting portions of natural rock. On the side opposite to it, and at a distance of some 40 or 50 yards, is a white sand bund which would appear to be of more modern date; and there are also on the inner side of the bund the remains of a stone wall similar to the other. These remains extend, however, to no great length; and it is only the uniformity in build and material, combined with the position, which warrants the belief that it once formed a full face to the tank, corresponding with the erection still extant. Supposing this to have been the case, the real reservoir is no longer in the intermediate space intended for the reception of water. It is in a depression on the further side of the bund. The place is a great resort for the Mêd and Belooch women, who come up to bathe and wash there. The stone used for the old building is hard sandstone, and the whole is solid and well put together.

But there is a higher and steeper ascent to be made on the same range of hills which repays the exertion. Above the pale perpendicular cliff which immediately overlooks the town, and is known as the "Battel," is a long flat strip of rocky land, narrow and inaccessible at the eastern extremity, but widening, opening out, and easily attained to the west. At the narrowest point of the neck is thrown up, facing to the westward, a loose but regularly-constructed stone parapet wall of about 6 feet in height from the ground. Six embrasures for guns were counted at an intermediate elevation. Nearly at right angles from the southern corner, a second but lower wall runs to the westward with a front to the south. This wall overhangs a precipitous ascent, and is broken through in the centre by a ravine of some 20 feet in breadth. A few stones carefully piled up around the border of this cleft, appear to have been intended to reconnect the disrupted structure. From the outer, or parapet, wall guarding the western approach, to the extreme edge of the cliff on the town side, a space of, it may be, 200 yards is enclosed. On the east, as already stated, access is impossible. On the north it is little better. On the south it is rugged, difficult, and withal defended in the more accessible portion. The foundation of a house or square watch-tower is still visible. It looks as though the place were intended to become a final stronghold in the day of emergency.

There is a fine view from this hill. On one side Gwadur, in which the houses might be counted; the picturesque Maidee hill, behind which peers the Darram, and the promontories of Koppah and Shahid. On the other is the western bay, Pishkan and the long low point called Ghunse. To the north-west are two prominent, but not high, detached hills; and northward extends the long chain, behind which is the plain country leading to Kedje.*

* There are two roads leading to Kedje from Gwadur; one by the Dusht, skirting the terminus of the hills to westward; one by the Talár Pass, behind the Durram.

(E.)

MEMORANDUM of PLANTS observable between Sonmeanee and Ormara, according to the classification made in Bombay Government Records, No. XVII., new series, Part II.—Miscellaneous information connected with the province of Sind :—

Timber Trees.—							
Common ..	1	Bubbar ..	*Belooch.*	Chesh. ..	*Brahinkee.*	Bubbar.
Hinglaj ..	2	Ban.					
	3	Guz	,,	Gogiz ..	,,	Kirrari.
Common ..	4	Lyee, Sindee Dhandi Jhás	,,	Kirgiz ..	,,	Kurrey Kolar
	5	Kirrur-Karreh	,,	Kallér.		
	6	Hundo Kundi ..	,,	Kahoor / Kir	Sol.	
Gooroo Chela Hills	7	Timmer	,,	Timmer	,,	Timmer.
	8	Lyar.				
Common ..	9	Ber	,,	Ber.		
Haddee ..	10	Berjangree ..	,,	Passee.		
Cordage, &c.—							
Common ..	1	Pfees	,,	Pish ..	..	Pish.
Ditto ..	2	Kip	,,	Gishtur.		
Ditto ..	3	Sur	,,	Kash.		
Ditto ..	4	Uk	,,	Koik ..	,,	Koik.
Edible Plants—							
	1	Sawree	,,	Kooleshk.		
Camel Fodder—							
Shir Koomb ..	1	Sewar Sihar ..	,,	....	,,	Hijurrarah.
Sonmeanee ..	2	Thuhur	,,	Dedar ..	,,	Dedar.
Common ..	3	Sanee. gen. ..	,,	Soruk.		
	4	Mitho Lanee ..	,,	Riggut.		
	5	Kharee Lanee ..	,,	Gurdur.		
Said to be noxious when moist with dew	6	Jhil	,,	Chill ..	,,	Niltakh.
	7	Kubher tree ..	,,	Toja.		
	8	,, plant ..	,,	Kubber.		
	9	Kandero	,,	Sheenz.		
Wild Plants not classified.—							
	1	Booh grass ..	,,	Gujjo.		
	2	Drut ditto ..	,,	Drukh.		
	3	Phog, good firewood.					
	4	Nar	,,	Null.		
	5	Kahu	,,	Hutt ..	,,	Khutt.
	6	Gum-grass ..	,,	Gundeel.		
	7	A common grass	,,	Goorka.		

F. J. GOLDSMID.

Ormara, 6th January, 1862.

NOTE.—In the hill country, and especially among ravines bordering on the sea, is a very pretty little wild flower called the "Dela Koon." It peeps out from amidst a stiff clotted mass like furze, of a dark green colour, and is of a delicate whitish

grey. The small yellow flower known as Jungu Katnee, here called "Kul Muragh," with its light green pulpy stalk, is also common to these parts. It has a strong and not unpleasant odour. Among trees, the dwarf palm is abundant in the neighbourhood of Ormara.

F. J. GOLDSMID.

14th January, 1862.

(F.)

Major Preedy has given us the names of nine tribes in the province of Lus. But neither he nor any other authority that I can find enlightens us as to who or what these tribes are, or whence they originate. I think, however, that most of the current discrepancies may be reconciled by considering the Beyla tribes as Semmas, under the following revised classification :—

1. Jamote—chief, Azim Khan, Nawab of Sonmeanee.
2. Sabra and Achra—chief, Darya Khan.
3. Guddore—chiefs, Wullee Mahomed and Zenagee, sons of Haroon.
4. Angaryo—chief, Sher Mahomed.
5. Goonga—chief, Meek Wassaya.
6. Boona—chief, Saheb Khan.
7. Moondranee—chief, Mahomed Khan.
8. Sheikh—chief, Munghya.
9. Guddra—chief, Darogka Bilaurel.
10. Mussoor—chief, Nathatoo.
11. Baradia—chief, Joomer.
12. Meree—chief, Prima.
13. Roonjha; 14. Mussona; 15. Dhira; 16. Bodhur; 17. Manga; 18. Waora; and 19. Zor: for the last seven of which respectively, I have not found a responsible leader.

The intermarriages with the great Noonya tribe are so frequent, that it is not improbable the members of this denomination may rightly belong to the same category as the clans of Beyla, and the title of "Djam" would lead to the belief that the Djokyas have a similar origin. At all events I would include the Nonmyas. If they be supposed rather to belong to Sind, so, indeed, do many of the Beyla tribes above mentioned. For instance, the Djamote is a resident of the Selman district. The Goongo Aehro Meree, and perhaps others are placed among Sindees.

Pottinger says that the population of Lus "are all of one tribe, though known by the four different appellations of Noomree, Djudgall, Djollya, and Djeth." This opinion serves to confirm the notion of a common origin for a great proportion of the inhabitants of the coast from Cape Urboo to the Run of Kutch. In Sind history there is a great confusion from the close of the 13th to the commencement of the 16th century. This was the interval during which the Semmas, Abras, and Soomros are, by local tradition, invested with rule in Sind: the Abras in Upper Sind, where they still abound, the Soomras in the central districts, and the Semmas on the sea coast and in Thattah. These last are now to be readily traced in Nuggur, Parkhur, and the lower eastern desert tracts of the province, in a line which followed up to the westward, terminates at Beyla, and includes the Noomryas of Thunna Ahmed Khan.

VII.—*Narrative of a Journey from Lagos to Odé, the Capital of the Ijebu Country, in the month of January*, 1862. By Captain Bedingfeld, R.N.

Read, April 27, 1863.

My object in visiting Odé was to ascertain the feelings of the king with regard to the war waging between the Eghas and Thaddans, and also to induce him to keep the roads open through his country in the event of our sending messengers to Dr. Baikie, on the Niger. I had a special invitation to go and visit him, and as, with the exception of the Rev. Mr. Champneys (a Wesleyan minister), he had never seen a white man, the present was considered a good opportunity for accepting it.

I took with me Lieut. Dolbin, of H.M.S. *Prometheus*, and my interpreter. We hired a canoe at Lagos, and started at 10 P.M. on the 12th January, hoping to reach Eginé Market (a distance of about 35 miles) by noon the next day. I had arranged to meet Tappa and some other chiefs of Kosoko's, and hold a palaver with reference to the affairs of the market. We experienced a strong head-wind, however, and did not arrive at our destination until 4 P.M., when the chiefs had given us up, and left for an extensive farm of Tappa's, on the opposite side of the lagoon. A messenger was at once sent over, and we soon saw the large war canoe of my old friend dashing across for the landing.

We started at 8 A.M. the following morning, notwithstanding a serious engagement had taken place a day or two before with an adjoining hostile tribe, which had plunged the whole community into mourning. Our party consisted of Lieut. Dolbin and myself on horses, and Mr. Turner in a hammock, the interpreter, William Jones, and six carriers with the luggage. Our course was at first about north-east, and lay though forest-land extensively cleared, and dotted with villages. About noon we came to the large village of "Omu," where an unfortunate affair happened that will be perhaps worth relating, as it might have put an end to our journey, and probably our lives.

We halted here under the "Bay tree" (to be found in the centre of most African villages), when some men passed, having on their heads pots of palm wine. My thirsty carriers requested me to purchase some for them, which I consented to do, and they hailed the men to stop. This, however, they did not seem inclined to do, and the King's messenger, who was with us, possibly wishing to show his importance, ran after them, and caught hold of one of the pots. The owner immediately drew a sort of short sword, and made a cut at him. The blow was evaded, and nothing more

would have occurred, had not one of our carriers, in an excess of zeal for the dignity of a royal messenger, cut the man down. In less time than it takes to relate it, the whole village turned out with muskets, swords, and all sorts of offensive weapons, and we seemed in for a fight. Mr. Turner, Lieut. Dolbin, and myself ran down amongst them, and luckily succeeded in stopping it for the time. But as they were evidently working themselves into a rage, and the screaming of the women rendering it impossible to get a hearing, or to reason with them, after several ineffectual attempts I directed the messenger to send our carriers the nearest way out of the town, and Lieut. Dolbin and I mounted and brought up the rear, keeping our revolvers ready for an attack. In this order we beat a retreat in safety, with all our people, except the man who had struck the blow, who, it afterwards appeared, thought it prudent to bolt altogether. Reaching Eginé Market, he spread the intelligence that we had been attacked and all killed. He then took a canoe in the night, and made himself scarce.

On arriving at the next village, I sent for the elders, and informed them of what had taken place at Omu, expressing my regret that a man should have been wounded in such a foolish way. They informed me (with a request that I would not make myself uncomfortable) that "they were a very quarrelsome lot at that village, and that killing a few of them would do much good."

We arrived at Odé without further accident between two and three afternoon, and were conducted to the house of the "Olmoo" (one of the principal chiefs), whose duty it is to receive strangers. After the usual amount of ceremony and compliments, the king sent to inform us he would see us on the morrow, and we were left to the attentions of the "Olmoo," who certainly did his best to make our stay of three days as comfortable as possible.

Our interview with the king ("Oujelly") took place after dark, according to the usual custom. We found him in a small house surrounded by his principal chiefs. On being introduced, I offered to shake hands, when his people all exclaimed I should poison or bewitch him; but he at once held out his hand, and gave me a hearty shake. I told him I was glad he had more confidence than his people. He said, "You must not be offended at them, as few of them have ever seen white men before." He also informed me that he would have waived the custom of "seeing the King at night" in my case, had it not been that during the whole day his yard had been full of people wailing and mourning for the dead. We then had a most interesting conversation for about two hours. I found him most intelligent both in his questions and answers. He dismissed us with every assurance of personal friendship, stating he would always be glad to see me again. As soon as the war

was over, he wished to open out his country to legitimate commerce, and to become better acquainted with white men.

Odé seems about N.N.E. from Eginé, some 26 miles distant. The country we travelled through was undulating forest-land, extensively cleared for cultivation. Corn-fields were to be seen as far as the eye could reach. I have never in any part of Africa seen so much cultivation.

The road, or more properly *bridle-path*, is beautifully shaded nearly the whole distance: it apparently being the rule not to clear away the trees nearer than about 20 feet on either side.

The villages are numerous, large, and clean; the houses built substantially of bright red clay. Odé is surrounded by a thick wall of this clay, with a deep ditch on the outside. It is said to be 12 miles round. The houses are somewhat scattered and separate from each other on account of the danger of fire. There is a good supply of water from a stream running through the town, but they have no wells. This stream runs into the lagoon, about 6 miles to the westward of Eginé Market. It is not navigable even for canoes. They have no name for it, but I believe it to be the Oshun.

Corn is the principal food of the people. Casada is seldom used.

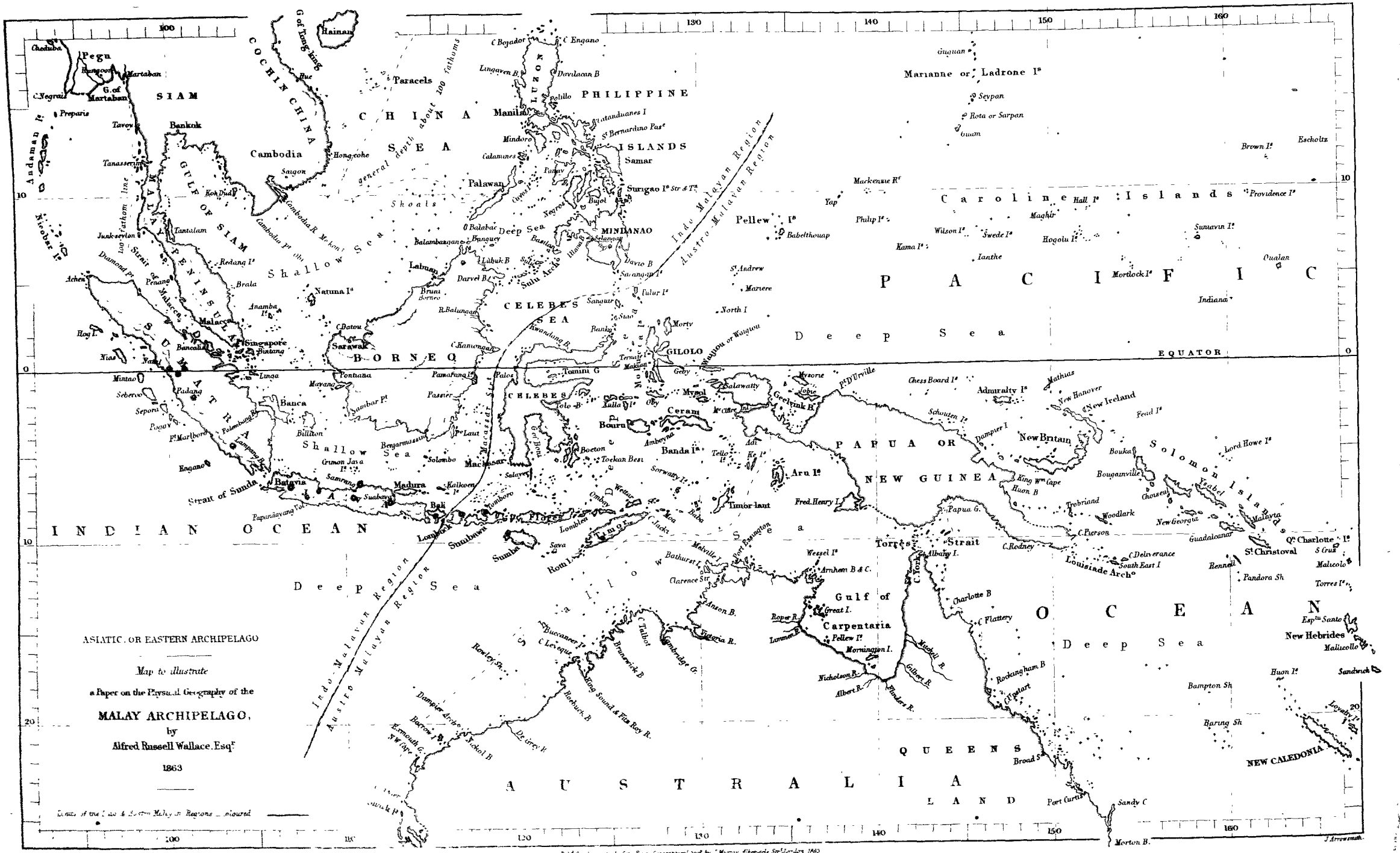
On the death of the king (Oujelly), one of his sons is elected by the elders without reference of seniority, and when once made king he can never show himself outside his house in the daytime; and although he may move about privately at night, yet he must not be recognised. This also applies to the principal chief, who is called Ogh'hony'ogy, and is constantly in attendance on the king.

The second chief, "Olmoo," is the principal man of business. He receives all the king's visitors and strangers, tries all minor offences, and presides over the elders when there is a trial for life. Having tried the case, the king only can give sentence of death.

The position of an elder is hereditary, and the class is selected from among the heads of the principal families, who are called "Appéno." The king's messengers are also men of some importance: they are called "Banghala."

The religion, like that of other Africans, is gross fetishism; both human beings and animals being occasionally offered in sacrifice.

On our return through the village of Omu, we found that the people acquitted us entirely of blame in the business of the fight; and, indeed, the king told us that if the man had lived he should have punished him severely for having drawn his sword on his messenger. We, however, presented the poor old mother of the man killed with two bags of cowries, which were thankfully re-


ASIATIC, OR EASTERN ARCHIPELAGO
Map to illustrate
a Paper on the Physical Geography of the
MALAY ARCHIPELAGO,
by
Alfred Russell Wallace, Esq.r
1863
Limits of the Indo & Austro Malayan Regions coloured
Indo Malayan Region
Austro Malayan Region
Wallace's Line
general depth about 100 fathoms
Shoals
Deep Sea
Shallow Sea
CHINA SEA
SIAM
COCHIN CHINA
CAMBODIA
BORNEO
SUMATRA
CELEBES
GILOLO
PHILIPPINE ISLANDS
MINDANAO
Sulu Archo
Pellew Is
Carolina Islands
PACIFIC OCEAN
INDIAN OCEAN
NEW GUINEA
PAPUA OR
Solomon Islands
Louisiade Archo
Gulf of Carpentaria
QUEENS
AUSTRALIA
LAND
NEW CALEDONIA
New Hebrides
Marianne or Ladrone Is
Strait of Sunda
Torres Strait
EQUATOR
Pegu
Bangoon
Martaban
G. of Martaban
Tavoy
Bankok
Cambodia
Hong-cohe
Saigon
Tanasserim
Kok Dud
Tantalam
Junk-ceylon
Diamond Pt
Penang
Malacca
Singapore
Pintang
Natuna Is
Anamba Is
Labuan
Brunei
Borneo
Sarawak
Banca
Billiton
Linga
Pontiana
Sambar Pt
Passier
Macassar Str
Boeton
Tookan Bessi
Solombo
Celebes
Bouru
Ceram
Banda Is
Aru Is
Timor laut
Flores
Sumbawa
Lombock
Bali
Java
Batavia
Samarang
Madura
Suabaya
Grisee
Cheduba
Andaman Is
Nicobar Is
Hainan
Paracels
C Negrais
Preparis
Redang I
Brala
Natuna Is
Mintao
Seberoo
Padang
Seporo
Pogay
Ft Marlboro
Engano
Lampong R
Palembang R
Crimon Java I
Kalkoen I
Paparoayang Tol
Cambodia R
Mekong R
Cambodia Pt
Obi
Lingayen B
Davilacan B
C Bojador
C Engano
Manilla
Mindoro
Calamines
Panay
Negros
Cuyo I
Palawan
Balabac
Balambangan
Banguey
Labuk B
Darvel B
Sulu Archo
Basilan
Illana B
Davio B
Sarangani I
Bajol
Surigao I & Str & T
Samar
Leyte
Ticao I
Catanduanes I
St Bernardino Pas
Guguan
Seypan
Rota or Sarpan
Guam
Yap
Mackenzie R
Pellew Is
Babelthouap
Philip I
Wilson I
Swede I
Kama I
Ianthe
Maghir
Hall Is
Providence I
Sunuavin I
Hogolu Is
Mortlock Is
Oualan
Brown Is
Escholtz
Indiana
St Andrew
Mariere
North I
Pulur I
Sangur
Sulo
Morty
Ternate
Makian
Geby
Mysol
Kalawatty
Jobie
Mysore
Pt D'Urville
Chess Board Is
Admiralty Is
Mathias
New Hanover
New Ireland
Feual I
Schouten Is
Dampier I
New Britan
Geelvink B
Tomini G
Tolo B
Xulla Is
Oby
Amboyna
Adi
Tello Is
Ke Is
Sorwaty Is
Weluar
Ombay
Moa
Baba
Wessel Is
Arnhem B & C
Fred Henry I
Papua G
Huon B
King Wm Cape
Trobriand
Woodlark
Bougainville
Bouka
Lord Howe I
Chioseul
Isabel
New Georgia
Malayta
Guadalcanar
C Pierson
C Rodney
C Deliverance
South East I
Albany I
Rennell
St Christoval
Q Charlotte Is
S Cruz
Malicolo
Torres Is
Pandora Sh
Esp.to Santo
Malicollo
Sandwich
Huon Is
Loyalty I
Bampton Sh
Baring Sh
Rockingham B
C Upstart
Broad S
Port Curtis
Sandy C
Morton B
Mitchell R
Gilbert R
Flinders R
Albert R
Nicholson R
Rope R
Lumley R
Great I
Pellew Is
Mornington I
Victoria R
Anson B
Charlotte B
C Flattery
C Talbot
Cambridge G
Buccaneer Is
C Leveque
Brunswick B
Rowley Sh
Hanover B
Dampier Archo
Bedout I
Scholl B
Roebuck B
King Sound & Fitz Roy R
De Grey R
Ermouth G
NW Cape
Bathurst I
Melville I
Port Essington
Clarence Str
Lombok Str
Macassar Str
Gulf of Boni
Sea
Lingayen B
Davilacan B
C Bojador
C Engano
Manilla
Mindoro
Calamines
Panay
Negros
Cuyo I
Palawan
Balabac
Balambangan
Banguey
Labuk B
Darvel B
Sulu Archo
Basilan
Illana B
Davio B
Sarangani I
Bajol
Surigao I & Str & T
Samar
Leyte
Ticao I
Catanduanes I
St Bernardino Pas
Guguan
Seypan
Rota or Sarpan
Guam
Yap
Mackenzie R
Pellew Is
Babelthouap
Philip I
Wilson I
Swede I
Kama I
Ianthe
Maghir
Hall Is
Providence I
Sunuavin I
Hogolu Is
Mortlock Is
Oualan
Brown Is
Escholtz
Indiana
St Andrew
Mariere
North I
Pulur I
Sangur
Sulo
Morty
Ternate
Makian
Geby
Mysol
Kalawatty
Jobie
Mysore
Pt D'Urville
Chess Board Is
Admiralty Is
Mathias
New Hanover
New Ireland
Feual I
Schouten Is
Dampier I
New Britan
Geelvink B
Tomini G
Tolo B
Xulla Is
Oby
Amboyna
Adi
Tello Is
Ke Is
Sorwaty Is
Weluar
Ombay
Moa
Baba
Wessel Is
Arnhem B & C
Fred Henry I
Papua G
Huon B
King Wm Cape
Trobriand
Woodlark
Bougainville
Bouka
Lord Howe I
Chioseul
Isabel
New Georgia
Malayta
Guadalcanar
C Pierson
C Rodney
C Deliverance
South East I
Albany I
Rennell
St Christoval
Q Charlotte Is
S Cruz
Malicolo
Torres Is
Pandora Sh
Esp.to Santo
Malicollo
Sandwich
Huon Is
Loyalty I
Bampton Sh
Baring Sh
Rockingham B
C Upstart
Broad S
Port Curtis
Sandy C
Morton B
Mitchell R
Gilbert R
Flinders R
Albert R
Nicholson R
Rope R
Lumley R
Great I
Pellew Is
Mornington I
Victoria R
Anson B
Charlotte B
C Flattery
C Talbot
Cambridge G
Buccaneer Is
C Leveque
Brunswick B
Rowley Sh
Hanover B
Dampier Archo
Bedout I
Scholl B
Roebuck B
King Sound & Fitz Roy R
De Grey R
Ermouth G
NW Cape
Bathurst I
Melville I
Port Essington
Clarence Str
Lombok Str
Macassar Str
Gulf of Boni
Sea
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J. Arrowsmith.

ceived and seemed to have a good effect. We got back without accident of any kind, paying Kosoko a visit on our way.

In conclusion, I must mention an incident to show the strength of the lady portion of the inhabitants; both male and female are a remarkably tall, fine race. One of my trunks, containing several heavy articles, was declared too much for one man to carry. One after the other stepped out, and declared it impossible. A woman standing by asked permission to feel the weight, and, having done so, offered to carry it. I told the man whose duty it was, that if he could not carry it I should dismiss him and hire the woman. He again refused, saying it would kill him: so my lady friend got another woman to put it on her head, and away she trotted and kept ahead of us the whole way down—25 miles—she being the first to arrive at the market. I was so pleased with her performance that I ordered her double hire, much to the delight of all the women, who *chaffed* the men dreadfully for their lack of strength.

VIII.—*On the Physical Geography of the Malay Archipelago.*

By ALFRED RUSSELL WALLACE, Esq., F.R.G.S., &c. &c.

Read, June 8, 1863.

THE Malay or Indian Archipelago is that extensive group of islands which occupies the space between south-eastern Asia and Australia, and divides the Indian from the Pacific Ocean. From whatever point of view we survey this portion of the earth's surface—whether as regards its superficial extent, or the immense number of islands with which it is overspread, or the individual size of those islands; whether we examine their peculiarities of climate, or their geological structure, their rich and varied vegetation, their wonderful animal productions, or the strongly-contrasted races of mankind that inhabit them; or if, lastly, we look at them from a commercial and political point of view, noting the varied products which they furnish to supply the necessities and luxuries of mankind, trace the struggles of the chief nations of Europe for a share in their fertile soil, and watch the interesting moral and political problems now being worked out there; we shall be convinced that no part of the world can offer a greater number of interesting facts for our contemplation, or furnish us with more extensive and varied materials for speculation in almost every great department of human knowledge.

On the present occasion I propose to give a sketch of what is most interesting in the physical geography of this region, including

in that term the general relations of the organic world to the present and past conditions of the earth's surface.

1. *Definition of the Archipelago, Position, Extent, and Magnitude of the chief Islands.*—It first becomes necessary to define accurately the limits of the Archipelago, pointing out exactly what islands we include within it; for, though "all the islands between south-eastern Asia and Australia" seems pretty definite, yet to the eastward this region blends insensibly into the vast extent of the Pacific islands. According to my views, the Malay—or, as I should prefer to name it, the Indo-Australian — Archipelago extends from the *Nicobar Islands* on the north-west to *St. Christoval*, one of the Solomon Islands, on the south-east, and from *Luzon* on the north to *Rotti*, near Timor, on the south. The eastern boundary is drawn at this particular point for reasons which will be explained further on. Though not geographically correct to include any part of a continent in an archipelago, it is necessary for our purpose to consider the Malay peninsula as not only almost but quite an island, since it cannot be physically separated from the region of which we are now treating.

Thus limited, the Archipelago is of a somewhat triangular form, with an extreme length of about 5000, and a breadth of rather more than 2000 English miles. The mere statement of these dimensions, however, will give but an imperfect idea of the extent and geograpical importance of this region, which, owing to its peculiar position, is worse represented on maps than any other on the globe. In many atlases of great pretension there is no map of the whole Archipelago. A small portion of it generally comes in with Asia, and another piece with the Pacific Islands; but in order to ascertain its form and extent as a whole we are almost always obliged to turn to the map of the Eastern Hemisphere. It thus happens that seldom seeing this region, except on a diminutive scale, its real form, dimensions, and the size, situations, and names of its component islands, are, perhaps, less familiar to educated persons than those of any other countries of equal importance. They can hardly bring themselves to imagine that this sea of islands is really in many respects comparable with the great continents of the earth. The traveller, however, soon acquires different ideas. He finds himself sailing for days or even for weeks along the shores of one of these great islands, often so great that the inhabitants believe it to be a boundless continent. He finds that voyages among these islands are commonly reckoned by weeks and months, and that the inhabitants of the eastern and western portions of the Archipelago are as mutually unknown to each other as are the native races of North and South America. On visiting the coasts of one of the larger islands, he hears of the

distinct kingdoms which lie along its shores, of the remote north or east or south of which he can obtain little definite information, and of the wild and inaccessible interior, inhabited by cannibals and demons, the haunt of the charmed deer which bears a precious jewel in its forehead, and of the primæval men who have not yet lost their tails. The traveller, therefore, soon looks upon this region as one altogether apart. He finds it possesses its own races of men and its own aspects of Nature. It is an island-world, with insular ideas and feelings, customs, and modes of speech; altogether cut off from the great continents into which we are accustomed to divide the globe, and quite incapable of being classed with any of them. Its dimensions, too, are continental. You may travel as many thousand miles across it, in various directions, occupying as many weeks and months as would be necessary to explore any of the so-called quarters of the globe. It contains as much variety in its climate, in its physical phenomena, its animate and inanimate life, and its races of mankind as some of those regions exhibit. If, therefore, the claim of Australia to be a *fifth* division of the globe be admitted, I would ask for this great archipelago (at least on the present occasion) to be considered a *sixth*.

I will now endeavour to give you a clearer idea of its extent and magnitude by comparing it with some regions nearer home. If, first, we bring the Malay Archipelago to Europe, keeping the meridians parallel, and place the western extremity of the island of *Sumatra* upon the *Land's End*, *New Guinea* will then spread over *Turkey* and a good deal of *Persia*, and the *Solomon Islands* will reach to the borders of the *Punjaub;* while the northern extremity of *Luzon* will be near the *White Sea*, and the islands of *Timor* and *Rotti* in *Syria*. The area of the whole Archipelago is, however, much less than its dimensions would seem to imply, being, on a fair calculation, about equal to that portion of Europe which lies south of St. Petersburg and the Shetland Islands.

Again, if we compare it with Equatorial America, we shall find its extent in longitude to exceed the width of that great continent, *Sumatra* stretching out into the Pacific to the west of *Panama*, while *New Guinea* would be washed by the Atlantic to the east of *Pernambuco*.

This great region of mingled land and water is, then, as a whole, comparable in its dimensions with the primary divisions of the earth, while its component parts are on an equally extended scale,—two of the islands, *Borneo* and *New Guinea*, being the largest on the globe. They are nearly equal in extent, and the only other island which approaches them is *Madagascar*. Borneo would contain within its vast area the whole of Great Britain and

Ireland, with all their islets from Scilly to Shetland in their true relative positions, and still leave boundless forests stretching out like an ocean beyond them. Then comes *Sumatra*, about equal to Great Britain; after which follow *Java*, *Luzon*, and *Celebes*, either of which may compare in size with *Ireland* or one of the larger *New Zealand Islands*. After these succeed eighteen islands, which average as large as Jamaica; more than *one hundred* about the size of the isles of Wight and Man, with many thousands of isles and islets below these, and which are practically innumerable.

In their physical constitution and attendant phenomena the islands of the Archipelago offer us some remarkable and instructive contrasts. Active and extinct volcanoes are abundant in many of the islands, in others they are altogether absent. The former, as a general rule, are subject to frequent earthquakes, which in the others are quite unknown. In the greater part of the Archipelago one vast, ever-verdant forest covers hill and valley, plain and mountain, up to the very loftiest summits; whereas in another and much smaller portion such dense and gloomy forests are altogether unknown, the country consisting of arid hills and plains, with a comparatively scanty covering of shrubs and trees. Again, over some extensive districts the monsoons, or periodical winds, with their attendant rains or drought, divide the year into a well-defined and regularly-recurring wet and dry season. Over other scarcely less extensive districts no such regularity exists; the inhabitants themselves can hardly tell you when their rainy or dry season usually begins, and the traveller soon finds the climate to be almost as variable and the skies as inconstant as in our own much-abused island. Even in districts where the season is regular, there are no less striking contrasts; one portion of an island having its wet weather while the remainder is parched up, and islands within sight of each other having very different seasons.

There is yet another contrasting aspect in which the Archipelago may be viewed, less obvious but leading to far more important results than any I have yet mentioned, namely, that one large portion of it is connected by a very shallow sea to the continent of Asia, another part is similarly joined to Australia, while the remaining islands are surrounded by a practically unfathomable ocean. We shall consider the chief islands of the Archipelago, therefore, under the heads of,—1st. *Volcanic* and *Non-Volcanic;* 2nd. *Forest Country* and *Open Country;* 3rd. *Well-marked Seasons* and *Undefined Seasons*; and 4th. *The Western or Indo-Malayan Region*, and the *Eastern or Austro-Malayan Region.*

Looking at a map on which the volcanic regions of the Archipelago are marked out—those which are subject to earthquakes, which are of volcanic origin, and which abound more or less in

extinct as well as active volcanoes—we see at a glance that the great islands of Borneo and Celebes form the central mass around which the volcanic islands are distributed so as rudely to follow their outline and embrace them on every side but one in a vast fiery girdle. Along this great volcanic band (about 5000 miles in length) at least fifty mountains are continually active, visibly emitting smoke or vapour; a much larger number are known to have been in eruption during the last 300 years; while the number which are so decidedly of volcanic origin that they may at any moment burst forth again, must be reckoned by hundreds.

In the whole region occupied by this volcanic belt, and for a considerable breadth on each side of it, earthquakes are of continual recurrence, slight shocks being felt at intervals of every few weeks or months, while more severe ones, shaking down whole villages, and doing more or less injury to life and property, are sure to happen in one part or another of this district almost every year. In many of the islands the years of the great earthquakes form the chronological epochs of the native inhabitants, by the aid of which the ages of their children are remembered, and the dates of many important events are determined.

It is not now my object to describe the many fearful eruptions that have taken place in this region. In the amount of injury to life and property, and in the magnitude of their effects, they have not been surpassed by any upon record. Forty villages were destroyed by the eruption of Papaudayang in Java, where the whole mountain was blown up by repeated explosions, and a large lake left in its place. By the great eruption of Toruboro in Sumbawa 12,000 people were destroyed, and the ashes darkened the air, and fell thick upon the earth and sea for 300 miles round. Even quite recently, since I quitted the country, a mountain which had been quiescent for more than 200 years suddenly burst into activity. The island of Makiau, one of the Moluccas, was rent open in 1646 by a violent eruption which left a huge chasm on one side, extending into the heart of the mountain. It was, when I last visited it, clothed with vegetation to the summit, and contained twelve populous Malay villages. On the 29th of December, 1862, after 215 years of perfect inaction, it again suddenly burst forth, blowing up and completely altering the appearance of the mountain, destroying the greater part of the inhabitants, and sending forth such volumes of ashes as to darken the air at Ternate, 40 miles off, and almost entirely to destroy the growing crops on that and the surrounding islands.

The island of Java contains more volcanoes, active and extinct, than any other known district of equal extent. They are about forty-five in number, and many of them exhibit most beautiful examples of the volcanic cone on a large scale, single or double,

with entire or truncated summits, and averaging 10,000 feet high.

It is now well ascertained that almost all volcanoes have been slowly built up by the accumulation of the matter—mud, ashes, and lava—ejected by themselves. The openings or craters, however, frequently shift their position; so that a country may be covered with a more or less irregular series of hills in chains and masses only here and there rising into lofty cones, and yet the whole may be produced by true volcanic action. In this manner the greater part of Java has been formed. There has been some elevation, especially on the south coast, where are extensive cliffs of raised coral limestone; and there may be a substratum of older stratified rocks, but still essentially Java is volcanic; and that noble and fertile island—the very garden of the East, and perhaps upon the whole the richest, the best cultivated, and the best governed tropical island in the world—owes its very existence to the same intense volcanic activity which still occasionally devastates its surface.

The great island of Sumatra exhibits in proportion to its extent a much smaller number of volcanoes, and a considerable portion of it has had probably a non-volcanic origin.

To the eastward the long string of islands from Java passing by the north of Timor and away to Banda are probably all due to volcanic action. Timor itself consists of ancient stratified rocks, but is said to have one volcano near its centre.

Going northward, Amboyna, a part of Bouru, and the west end of Ceram, the north part of Gilolo and all the small islands around it, the northern extremity of Celebes, and the islands of Siau and Sauguir are wholly volcanic. The Philippine Archipelago contains many active and extinct volcanoes, and has probably been reduced to its present fragmentary condition by subsidences attending on volcanic action.

All along this great line of volcanoes are to be found more or less palpable signs of great upheaval and depression of land. The range of islands south of Sumatra, a part of the south coast of Java, and of the islands east of it, the west and east end of Timor, portions of all the Moluccas, the Ké and Aru Islands, Waijiou, and the whole south and east of Gilolo consist in a great measure of upraised coral-rock, exactly corresponding to that now forming in the adjacent seas. In many places I have observed the very surfaces of the upraised reefs, with the great masses of coral standing up in their natural position and hundreds of shells, so fresh-looking that it was hard to believe they had been more than a few years out of the water; and, in fact, it is very probable that such changes have occurred within a few centuries.

In striking contrast with this region of subterranean fires, the

island of Celebes in all its southern peninsulas, the great mass of Borneo, and the Malay peninsula, are not known to contain a single volcano, active or extinct. To the east of the volcanic band is another quiescent area of 1000 miles wide, the great island of New Guinea being free from volcanoes and earthquakes. Towards its eastern extremity, however, these reappear in some small islands off its coast, and in New Britain, New Ireland, and the Solomon Islands, which contain active volcanoes.

The difference between the aspect of the volcanic and the non-volcanic regions is by no means so striking as might be imagined. Where active volcanoes or true volcanic peaks exist, a peculiar character is at once given to the islands, which are also in almost every case characterised by excessive fertility. In many of the adjoining districts, however, though volcanic products may be everywhere visible, the general aspect of the country, the outline of the hills, and the character of the vegetation, does not differ materially from those of many parts of Borneo and New Guinea. The island of Amboyna, for instance, consists principally of raised coral-rock almost everywhere covered with deep-red volcanic clays and gravels, and in places capped with basalt and lavas; yet the soil is by no means fertile, and where the native forest vegetation is cleared off, the ground bears only a scanty covering of dwarf shrubs and rigid herbage. The chief characteristic of the non-volcanic regions appears to me to consist in the great flat valleys that line the coasts, and penetrate far inland between the mountain ranges—the result of the long and uninterrupted action of rivers and tropical rains (combined probably with a slow elevation of the land) in filling up the gulfs that once intervened between the mountain ranges. A subsidence of a few hundred feet would reduce Borneo into a shape very similar to that of Celebes, which island may be considered to be now in the state that Borneo has just passed out of, and to be still engaged in filling up and converting into swampy plains the deep gulfs that at present occupy the spaces between her radiating lines of mountains.

The very extraordinary forms of Celebes and Gilolo have been imputed by some authors to sudden and capricious elevation. Mr. Windsor Earl speaks of the volcanic action where it was strongest "throwing the islands into fantastic forms." Celebes, however, is free from volcanoes except at its northern extremity, and its southern peninsula consists of mountains of basalt and limestone. From peculiarities in its natural productions, the shallowness of some of the gulfs between its peninsulas, and the number of coral islets that surround the southern portion of it, Celebes was once probably much more extensive, perhaps equal to Borneo, at a time when Borneo was just rising above the ocean,

and having the form rudely represented in the diagram. As in every part of the world of which we have accurate geological knowledge, risings and sinkings of the land to the amount of several hundreds of feet have repeatedly occurred, these two islands may each have successively assumed the form of the other without any violent convulsion. From the vast, swampy, level plains which stretch into the very heart of Borneo, allowing vessels to ascend its southern rivers about 300 miles in a straight line, it has probably been for a long time stationary, and thus been enabled to fill up the gulfs that formerly penetrated it. At a still earlier period it must have been much more deeply submerged, when the extensive coal-beds found in almost every part of it were being formed. This, however, was at no very remote period, geologically speaking, for the coal of Borneo is all tertiary. Instead of the ferns and lepidodendra, and other plants of extinct genera which abound in our coal-shales, those of Borneo contain only impressions of leaves of exogenous trees which can hardly be distinguished from those growing in the surrounding forests.

The contrasts of vegetation and of climate in the Archipelago may best be considered together, the one being to some extent dependent on the other.

Placed immediately upon the Equator, and surrounded by extensive oceans, it is not surprising that the various islands of the Archipelago should be almost always clothed with a forest vegetation from the level of the sea to the summits of the loftiest mountains. This is the general rule. Sumatra, New Guinea, Borneo, the Philippines and the Moluccas, and the uncultivated parts of Java and Celebes, are all forest countries, except a few small and unimportant tracts, due perhaps, in some cases, to ancient cultivation or accidental fires. To this, however, there is one important exception in the island of Timor and all the smaller islands opposite, in which there is absolutely no forest such as exists in the other islands, and this character extends in a lesser degree to Flores, Sumbawa, Lombock, and Bali.

In Timor the most common trees are *Eucalypti* of several species, so characteristic of Australia, with sandalwood, acacia, and other sorts in less abundance. These are scattered over the country more or less thickly, but never so as to deserve the name of a forest. Coarse and scanty grasses grow beneath them on the more barren hills, and a luxuriant herbage in the moister localities. In the islands between Timor and Java there is often a more thickly wooded country, but thorny and prickly trees abound. They seldom reach any great height, and during the force of the dry season they almost completely lose their leaves, allowing the ground to be parched beneath them, and contrasting strongly with

the damp, gloomy, ever-verdant forests of the other islands. This peculiar character, which extends in a less degree to the southern peninsula of Celebes and the east end of Java, is most probably owing to the proximity of Australia. The south-east monsoon, which lasts for about two-thirds of the year (from March to November), blowing over the northern parts of that country, produces a degree of heat and dryness which assimilates the vegetation and physical aspect of the adjacent islands to its own. A little further eastward in Timorlaut and the Ke Islands, a moister climate prevails, the south-east winds blowing from the Pacific through Torres Straits, and as a consequence every rocky islet is clothed with verdure to its very summit. Further west again, as the same winds blow over a wider and wider extent of ocean, they have time to absorb fresh moisture, and we accordingly find the island of Java possessing a less and less arid climate in the dry season, till in the extreme west near Batavia rain occurs more or less all the year round, and the mountains are everywhere clothed with forests of unexampled luxuriance.

The changes of the monsoons and of the wet and dry seasons in some parts of the Archipelago, are very puzzling; and an accurate series of observations in numerous localities is required to elucidate them.

"Speaking generally," said Mr. Wallace, "the whole south-western part of the Archipelago, including the whole range of islands from Sumatra to Timor, with the larger half of Borneo and the southern peninsula of Celebes, have a dry season from April to November, with the south-east monsoon. This same wind, however, bends round Borneo, becoming the south-west monsoon in the China sea, and bringing the rainy season to Northern Borneo and the Philippines."

In the Moluccas and New Guinea the seasons are most uncertain. In the south-east monsoon from April to November, it is often stormy at sea, while on the islands it is very fine weather. There is generally not more than two or three months of dry hot weather about August and September. This is the case in the northern extremity of Celebes and in Bouru, whereas in Amboyna July and August are the worst months in the year. In Ternate, where I resided at intervals for three years, I never could find out which was the wet and which the dry season. The same is the case at Banda, and a similar uncertainty prevails in Menado, showing probably that the proximity of active volcanoes has a great disturbing meteorological influence. In New Guinea a great amount of rain falls more or less all the year round. On the whole the only general statement we can make seems to be that the countries within about 3° on each side of the Equator have much rain and not very strongly contrasted seasons; while those with more south

or north latitude, have daily rains during about four months in the year, while for five or six months there is almost always a cloudless sky and a continual drought.

We have next to consider the Malayan Archipelago in its geological and zoological relations to Asia and to Australia, it being now a well established fact that one portion of it is almost as much Asiatic in its organic productions as the British Isles are European, while the remainder bears the same relation to Australia that the West India Islands do to America.

It was first pointed out by Mr. George Windsor Earl, in a paper read before this Society eighteen years ago, that a shallow sea connected the great islands of Sumatra, Borneo, and Java, to the Asiatic continent, with which they generally agreed in their natural productions; while a similar shallow sea connected New Guinea and some of the adjacent islands to Australia. Owing, however, to that gentleman's imperfect knowledge of the natural history of the various islands, he did not fully appreciate the important results of this observation, and in fact in the same paper argued in favour of the former connection of Asia and Australia—a connection to which the whole bearing of the facts in physical geography and natural history is plainly opposed.

In order to make this subject intelligible, it is necessary to make a few observations on the relations of the geographical distribution of animals and plants with geology.

It is now generally admitted that the present distribution of living things on the surface of the earth, is mainly the result of the last series of changes that the surface has undergone. Geology teaches us that the surface of the land and the distribution of land and water is everywhere slowly changing. It further teaches us that the forms of life which inhabit that surface have, during every period of which we possess any record, been also slowly changing.

It is not now necessary to say anything about *how* either of those changes took place; as to that, opinions may differ; but as to the fact that the changes themselves *have* occurred from the earliest geological ages down to the present day, and are still going on, there is no difference of opinion. Every successive stratum of sedimentary rock, sand or gravel, is a proof that changes of level have taken place; and the different species of animals and plants, whose remains are found in these deposits, prove that corresponding changes did occur in the organic world.

Taking, therefore, these two series of changes for granted, some of their effects are visible in the present peculiarities and anomalies in the distribution of species. In our own islands, with a few very trifling exceptions, every quadruped, bird, reptile, insect, and plant, is found also on the adjacent continent. In the small island of Corsica, there are some quadrupeds, birds and insects quite peculiar

to it; in Ceylon, more closely connected to India than Britain is to Europe, many animals and plants of all kinds are quite different from those found in India. In the Galapagos Islands every indigenous living thing is peculiar to them, though closely resembling other kinds found in the neighbouring parts of the American continent.

Now, in all cases where we have independent geological evidence, we find that those islands, the productions of which are identical with those of the adjacent countries, have been joined to them within a comparatively recent period, such recent unity being in most cases indicated by the very shallow sea still dividing them; while in cases where the natural productions of two adjacent countries is very different, they have been separated at a more remote epoch—a fact generally indicated by a deeper sea now dividing them. The reason of this is obvious. For example: let a subsidence take place, cutting off any portion of a continent, and forming an island. The organic productions of the two portions are at first identical, but they are not permanent. The changes that have always gone on still go on. Some species slowly die out, new ones take their place, and thus in time the animals and plants of the island come to differ from those of the country from which it was severed; and if the subsidence which first separated them goes on widening and deepening the sea between them, there will come in time to be such a marked difference in their productions as we see between Madagascar and Africa.

This general principle is of almost universal application, so that when we find an island whose animals and plants exactly agree with those of an adjacent land, we look for evidence of its recent separation from that land; while, on the other hand, any remarkable diversity of natural productions forces on us the conclusion that the watery barrier which now exists has existed for a very long geological period; and when the diversity is almost total, not only in species but in larger groups such as general families and orders, we conclude that these countries could never have been connected since our continents and oceans had assumed their present general outlines.

Returning now to the Malay Archipelago, we see that the whole of the seas connecting Java, Sumatra, and Borneo with Malacca and Siam are under 50 fathoms deep, so that an elevation of only 300 feet would add this immense district to the Asiatic continent. The 100 fathom line will also include the Philippine Islands and the island of Bali, east of Java. From this we should naturally conclude that the subsidence breaking up this portion of Asia had recently taken place, and we have a very sufficient cause for such subsidence in the vast range of volcanoes in Sumatra and Java, whose elevatory action must have been counterbalanced by some

adjacent depression. On examining the zoology of these countries this opinion is confirmed, for we find the most overwhelming evidence that these great islands must have once formed a part of the continent, and could only have been separated at a very recent geological epoch. The elephant and tapir of Sumatra and Borneo, the rhinoceros of Sumatra and the allied species of Java, the wild cattle of Borneo and the kind long supposed to be peculiar to Java, are now known all to inhabit some part or other of Southern Asia. None of these large animals could possibly have passed over the arms of the sea which now separate these countries, and therefore plainly indicate that a land communication must have existed since the origin of the species. Among the smaller mammals a considerable portion are common to each island and the continent; but the vast physical changes that must have occurred during the breaking up and subsidence of such extensive regions have led to the extinction of some in one or more of the islands, and in some cases there seems also to have been time for a change of species to have taken place. Birds and insects illustrate the same view, for every family and almost every genus of birds and insects found in any of the islands occur also in the Asiatic continent, and in a great number of cases the species are exactly identical. Birds offer us one of the best means of determining the laws of distribution; for though at first sight it would appear that the watery boundaries which keep out the land quadrupeds could be easily passed over by birds, yet practically it is not so, for if we leave out the aquatic tribes which are pre-eminently wanderers, it is found that the others (and especially the passeres or true perching-birds which form the vast majority) are generally as strictly limited by straits and arms of the sea as are quadrupeds themselves. As an instance among the islands of which I am now speaking, it is a remarkable fact that Java possesses numerous birds which never pass over to Sumatra, though they are separated by a strait only 15 miles wide, and with islands in mid-channel. Java, in fact, possesses more birds and insects peculiar to itself than either Sumatra or Borneo, and this would indicate that it was earliest separated from the continent; next in organic individuality is Borneo, while Sumatra is so nearly identical with the peninsula of Malacca in all its animal forms, that we may safely conclude it to have been the most recently dismembered island.

The general result, therefore, at which we arrive is, that the great islands of Java, Sumatra, and Borneo resemble in their natural productions the adjacent parts of the continent, almost as much as such widely-separated districts could be expected to do even if they still formed a part of Asia; and this close resemblance, joined with the fact of the wide extent of sea which separates them being so uniformly and remarkably shallow, and lastly, the existence of the

extensive range of volcanoes in Sumatra and Java, which have poured out vast quantities of subterranean matter and have built up extensive plateaux and lofty mountain ranges, thus furnishing a "*vera causa*" for a parallel line of subsidence—all lead us irresistibly to the conclusion that at a very recent geological epoch the continent of Asia extended far beyond its present limits in a south-easterly direction, including the islands of Java, Sumatra, and Borneo, and probably reaching as far as the present 100 fathom line of soundings.

The Philippine Islands agree in many respects with Asia and the other islands, but present some anomalies, which seem to indicate that they were separated at an earlier period, and have since been subject to many revolutions in their physical geography.

Turning our attention now to the remaining portion of the Archipelago, we shall find that all the islands from Celebes and Lombock eastward, exhibit almost as close a resemblance to Australia and New Guinea as the Western Islands do to Asia. It is well known that the natural productions of Australia differ from those of Asia more than those of any of the four ancient quarters of the world do from each other. Australia, in fact, stands alone: it possesses no apes or monkeys, no cats or tigers, wolves, bears, or hyenas; no deer, or sheep, or oxen; no elephant, horse, squirrel, or rabbit; none, in short, of those familiar types of quadruped which are met with in every other part of the world. Instead of these, it has marsupials only, kangaroos and opossums, wombats and the duck-billed *platypus*. In birds it is almost as peculiar. It has no woodpeckers and no pheasants, families which exist in every other part of the world; but instead of them it has the mound-making brush-turkeys, the honey-suckers, the cockatoos, and the brush-tongued lories, which are found nowhere else upon the globe.

CHIEF ISLANDS OF THE MALAY ARCHIPELAGO.

		Square Miles.
A.	1. New Guinea	290,000
	2. Borneo	237,000
B.	3. Sumatra	120,000
	4. Celebes	70,000
	5. Java	50,000
	6. Luzon	40,000
	7. Mindanao	28,000
C.	8. Timor	15,000
	9. Flores	10,000
	10. N. Britain	10,000
	11. Ceram	8,500
	12. Gilolo	7,000
	13. Sumbawa	6,000
	14. Bouru	5,000
	15. Banca	4,500
	16. N. Ireland	4,500

	Square Miles.
Comp. with German States	250,000
„ Spanish Peninsula	167,000
„ France	137,000
„ Great Britain	80,000
„ Cuba	54,000
„ Ireland	32,000
„ Portugal	29,000
„ Sardinia Islands	9,000
„ Holland	8,300
„ Jamaica	4,200

INDIAN REGION. *Characteristic Birds.*		AUSTRALIAN REGION. *Characteristic Birds.*	
Palæornis	Ring-necked parroquets.	Trichoglossidæ	Lories, Brush-tonged parroquets.
		Plyctolophidæ	Cockatoos.
		Platycercidæ	Broad-tailed parrots. Celebes only.
Picidæ	Woodpeckers.		
Bucconidæ	Barbets.		
Trogonidæ	Trogons.		
Ixodinæ	Fruit-thrushes.		
Musapeta	Paradise flycatchers.		
Phyllornithidæ	Green birds.		
Edolites	Paradise shrikes.	Meliphagidæ	Honeysuckers.
Pericrocotus	Minivets.	Paradiseidæ	Paradise birds.
Irena	Blue drongo.	Cracticus	Crow shrikes.
Phasianidæ	Pheasants and jungle fowl.	Megapodiidæ	Brush turkeys.
		Casuaridæ	Cassowary and emu.

INDIAN REGION. *Characteristic Mammals.*		AUSTRALIAN REGION. *Characteristic Mammals.*	
Simiadæ	Apes and monkeys.	Simiadæ	In Celebes only, 1 sp.
Galeopithecus	Flying lemur.		
Felidæ	Tigers, &c.		
Canidæ	Wolves, &c.		
Viverridæ	Civets, ichneumons, &c.	Viverridæ	In Celebes and Moluccas only, 1 sp.
Mustelidæ	Polecats, otters, &c.		
Ursidæ	Bears.		
Cervidæ	Deer.	Cervidæ	In Celebes and Moluccas only, 1 sp.
Bovidæ	Cattle and sheep.	Bovidæ	In Celebes only, 1 sp.
Tapirus	Tapir.		
Rhinoceros	Rhinoceros.		
Elephas	Elephant.	Sus	As far as N. Guinea.
Sciuridæ	Squirrels.	Belideus	Marsupial flying-squirrels.
Hystricidæ	Porcupines.	Cuscus	Eastern opossums.
Manis	Scaly ant-eater.	Dendrolagus,&c.	Kangaroos.

Now all these peculiarities exist also in the Australian portion of the Malay Archipelago, as may be seen by the tables of characteristic mammals and birds of the two regions. The contrast is nowhere so abruptly exhibited as on passing from the island of Bali to that of Lombock, where the two regions are in closest proximity. In Bali we have barbets, fruit-thrushes, and woodpeckers; on passing over to Lombock these are seen no more, but we have abundance of cockatoos, honeysuckers, and brush-turkeys, which are equally unknown in Bali and every island further west. The strait is here 15 miles wide, so that we may pass in two hours from one great division of the earth to another, differing as essentially in their animal life as Europe does from America. If we travel from Java or Borneo, to Celebes or the Moluccas, the difference is still more striking. In the first, the forests abound in

monkeys of many kinds, wild cats, deer, civets, and otters, and numerous varieties of squirrels are constantly met with. In the latter none of these occur; but the prehensile-tailed opossum is almost the only terrestrial animal seen, except wild pigs, which are found in all the islands, and deer (which have probably been recently introduced) in Celebes and the Moluccas. The birds which are most abundant in the Western Islands are woodpeckers, barbets, trogons, fruit-thrushes, and leaf-thrushes: they are seen daily, and form the great ornithological features of the country. In the Eastern Islands these are absolutely unknown, honeysuckers and small lories being the most common birds; so that the naturalist feels himself in a new world, and can hardly realise that he has passed from the one region to the other in a few days, without ever being out of sight of land.

The inference that we must draw from these facts is undoubtedly that the whole of the islands eastwards from Java and Borneo do essentially form a part of a former Australian or Pacific Continent, from which they were separated, not only before the Western Islands were separated from Asia, but probably before the extreme south-eastern portion of Asia was raised above the waters of the ocean; for a great part of the land of Borneo and Java is known to be geologically of quite recent formation, while the very great difference of species and in many cases of genera also between the productions of the Eastern Malay Islands and Australia, as well as the great depth of the sea now separating them, point to a comparatively long isolation and an early epoch of separation. It is interesting to observe among the islands themselves how a shallow sea always intimates a recent land-connection. The Aru Islands, Mysol, and Waigiou, as well as Jobie, agree with New Guinea in their mammalia and birds much more closely than they do with the Moluccas, and we find that they are all united to New Guinea by a shallow sea. In fact, the 100 fathom line round New Guinea marks out accurately the range of the true Paradise birds.

The existence of a Pacific continent was long ago indicated by Mr. Darwin's researches on the structure and origin of coral-reefs, the numerous atolls and barrier-reefs in the whole of this district being shown to depend upon the subsidence of land for long periods. This so exactly agrees with the singular unity now existing among the organic productions of a vast number of islands, which at the same time are very different from those of any other part of the world, that we must accept it as a fair deduction from the only evidence we can ever hope to obtain of this class of changes.

I would particularly call attention to the fact that the division of the Archipelago here pointed out, into two regions characterised by a striking diversity in their natural productions, does *not* correspond to any of the physical or climatal divisions of the surface.

The great volcanic chain runs through both parts: Borneo closely resembles New Guinea, not only in its vast size but in its climate and the general aspect of its vegetation; the Moluccas are the counterpart of the Philippines in their volcanic origin, their extreme fertility, their luxuriant forests, and their frequent earthquakes; and the east end of Java has a climate almost as dry as that of Timor. Yet between these corresponding groups of islands, constructed as it were after the same pattern, there is the greatest possible contrast in the animal productions. Nowhere does the ancient doctrine—that the peculiar animal and vegetable productions of the various countries of the globe are directly dependent on the physical conditions of those countries (such as climate, soil, elevation, &c.)—meet with a more direct and palpable contradiction. Borneo and New Guinea, as physically alike as two distinct countries can be, are zoologically wide as the poles asunder; while Australia, with its dry winds, its open plains, stony deserts, and temperate climate, yet produces the quadrupeds and birds which are most nearly allied to those inhabiting the hot, damp forests which everywhere clothe the plains and mountains of New Guinea.

We can now give the reason for limiting the Malay Archipelago on the east by the Solomon Islands in the Pacific Ocean. Certain groups of birds, which have their metropolis in New Guinea and extend over the Moluccas to the westward, are found also as far as the Solomon Islands to the eastward, but do not extend to New Caledonia (which is much more Australian in its productions), or to the Fejee Islands, where the peculiar Pacific fauna commences. These groups are the *scarlet lories* and the *white cockatoos*, and the occurrence of a new species of cassowary in New Britain is a further indication of these islands being as closely allied to New Guinea on the one hand as are the Moluccas on the other.

The nature of the contrast between these two great divisions of the Malay Archipelago will be best understood by considering what would take place if any two of the primary divisions of the earth were brought into equally close contact. Africa and South America, for example, differ very greatly in all their animal forms. On the one side we have baboons, lions, elephants, buffaloes, and giraffes; on the other spider-monkeys, pumas, tapirs, ant-eaters and sloths; while among birds, the hornbills, turacos, orioles, and honey-suckers of Africa contrast strongly with the toucans, macaws, chatterers, and humming-birds of America.

But let us endeavour to imagine (what it is very probable may occur in future ages) that a slow upheaval of the bed of the Atlantic should take place, while at the same time earthquake-shocks and volcanic action on the land should cause increased volumes of sediment to be poured down by the rivers, so that the two continents should gradually spread out by the addition of

newly-formed lands, so as to reduce the Atlantic which now separates them to an arm of the sea a few hundred miles wide. At the same time we may suppose islands to be upheaved in mid-channel, and, as the subterranean forces varied in intensity and shifted their points of greatest action, these islands would sometimes become connected with the land on one side or other of the strait, and at other times again be separated from it. Several islands would at one time be joined together, at another would be broken up again, till at last, after many long ages of such intermittent action, we might have an irregular archipelago of islands filling up the ocean channel of the Atlantic, in whose appearance and arrangement we could discover nothing to tell us which had been connected with Africa and which with America. The animals and plants inhabiting these islands would, however, certainly reveal this portion of their former history. On those islands which had ever formed a part of the South American continent we should be sure to find such common birds as chatterers and toucans and humming-birds, and some of the peculiar American quadrupeds; while on those which had been separated from Africa, hornbills, orioles, and honey-suckers would as certainly be found. Some portion of the upraised land might at different times have had a temporary connection with both continents, and would then contain a certain amount of mixture in its living inhabitants. Such seems to have been the case with the islands of Celebes and the Philippines. Other islands, again, though in such close proximity as Bali and Lombock, might each exhibit an almost unmixed sample of the productions of the continents of which they had directly or indirectly once formed a part.

In the Malayan Archipelago we have, I believe, a case exactly parallel to that which I have here supposed. We have indications of a vast continent, with a peculiar fauna and flora, having been gradually and irregularly broken up; the island of Celebes probably marking its furthest westward extension, beyond which was a wide ocean. At the same time Asia appears to have been extending its limits in a south-east direction, first in an unbroken mass, then separated into islands as we now see it, and almost coming into actual contact with the scattered fragments of the great southern land.

In dwelling upon this subject—which I trust I have succeeded in making intelligible—my object has been to show the important bearing of researches into the natural history of every part of the world upon the study of its past history. An accurate knowledge of any group of birds or of insects, and of their geographical distribution, may assist us to map out the islands and continents of a former epoch; the amount of difference that exists between the

animals of adjacent districts being closely dependent upon preceding geological changes. By the collection of such minute facts alone can we hope to fill up a great gap in the past history of the earth as revealed by geology, and obtain some indications of the existence of those ancient lands which now lie buried beneath the ocean, and have left us nothing but these living records of their former existence.

It is for such inquiries the modern naturalist collects his materials; it is for this that he still wants to add to the apparently boundless treasures of our national museums, and will never rest satisfied as long as the native country, the geographical distribution, and the amount of variation of any living thing remains imperfectly known. He looks upon every species of animal and plant now living as the individual letters which go to make up one of the volumes of our earth's history; and, as a few lost letters may make a sentence unintelligible, so the extinction of the numerous forms of life which the progress of cultivation invariably entails will necessarily render obscure this invaluable record of the past. It is, therefore, an important object, which governments and scientific institutions should immediately take steps to secure, that in all tropical countries colonised by Europeans the most perfect collections possible in every branch of natural history should be made and deposited in national museums, where they may be available for study and interpretation.

If this is not done, future ages will certainly look back upon us as a people so immersed in the pursuit of wealth as to be blind to higher considerations. They will charge us with having culpably allowed the destruction of some of those records of Creation which we had it in our power to preserve; and while professing to regard every living thing as the direct handiwork and best evidence of a Creator, yet, with a strange inconsistency, seeing many of them perish irrecoverably from the face of the earth, uncared for and unknown.

IX.—*Memorandum.—Earthquake of Erzerûm, June*, 1859. By ROBERT A. O. DALYELL, Esq., F.R.G.S., H.B.M. Consul at Erzerûm.

THE first shock took place on the 1st of June, about 8 A.M.: it was very sensibly felt, but did very little damage.*

On the 2nd of June, about 10·30 A.M., another shock occurred,

* Erzerûm is situated in latitude 39° 55' 20", and longitude 41° 18' 31"; height above the sea 6114 feet; the neighbouring geological formations resemble those of the Caucasus mountains, apparently metalliferous. Population about 35,000.

lasting about 8 seconds, and was followed about 11·30 A.M. by another, but of shorter duration.

The vibrations were horizontal; but, during the more violent shocks, a slight vertical motion is stated by some persons to have been perceptible: the direction of the shock appears to have been nearly from south-west to north-east.

On the 4th of June a severe shock was felt at Tabreez, in Persia, which, however, did no damage to the town.

Schamaki, a town in the Caucasus, near the Caspian, has suffered very severely by a shock which occurred there within a day or two after the shock here; but the Russian Consul informs me that his letters make no mention of the shock as having been felt in other parts of the Caucasus.

I have been unable to obtain accurate information as to how far the shock of the 2nd inst. was felt at intermediate points towards the north and north-east, but it does not appear to have been felt at any great distance to the southward. The shocks of the 1st and 2nd were felt in various villages in the plain of Erzerûm; but, so far as I can ascertain, they were not perceptible in the district of Tortûm. On the days of the shocks mentioned, the weather was sultry and louring, but not, it is said, very much different from what usually prevails at this season.

At a village called Souk-Tchermik,* in the neighbourhood, a mineral spring, the water of which is usually of a blue colour, became darkened in colour, and retained such colour for two days.

The sense of disquietude mentioned by Humboldt as affecting the lower animals during similar phenomena, was very remarkable in the barking, on the occasion even of slight shocks, of the numerous dogs with which the town abounds.

For considerably more than a month after the 2nd of June, slight shocks continued to occur about once in the twenty-four hours: one or two were rather severe, but did not occasion any damage.

Slight shocks appear to be of frequent occurrence at Erzerûm: they are not confined to a particular period of the year, but seem to be most frequent in spring.

The following is the official return of casualties furnished to the Pacha:—Killed, 460 Mussulmans; 11 Gregorian Armenian Christians; 1 Catholic Armenian Christian; 2 Greek Christians.

The Turkish quarters of the town were those which suffered most severely. 4500 houses were quite destroyed, or very seriously damaged; 12 mosques suffered more or less; 9 minarets were

* At many points in the plain of Erzerûm there are hot mineral springs; Souk-Tchermik is a cold spring, but its temperature is somewhat warmer in winter than in summer.

levelled with the ground; 7 Turkish schools were completely destroyed; 5 baths, many of the fountains, and 800 shops, were rendered useless. The khans, in which merchandise is deposited, being almost invariably vaulted, suffered very little.

The loss of life is probably not overstated: it would have been much greater had not the 2nd of June been a great festival (that of the Ascension). Few, comparatively, of the population, either Mussulmans or Christians, were in the bazaars, and many of the latter were absent from their houses.

The very solidly-built walls of the fortress, the palace of the Pacha, the Austrian, British, Persian, and Russian consulates, all among the most solidly constructed buildings of the town, have sustained considerable damage.

The pyramidal top of the Lalé Pacha minaret was, by one shock, moved a considerable distance on the column, of which it forms the summit, and by another shock was brought back to its original position.

The central government has afforded some assistance to the poorer inhabitants in rebuilding, and a commissioner has arrived from Constantinople.

At about an hour's distance from Erzerûm to the south, there is a point in the mountains surrounding the plain which would appear to be the crater of an extinct volcano;* and a mountain of the range bounding the plain of Erzerûm to the south, is easily recognisable by its form as an ancient crater.†

There are traditions in the country of a great earthquake which occurred about one hundred years ago, and by which, though the damage done at Erzerûm was not great, the villages in the plain of Passim, about 12 miles east from Erzerûm, suffered severely.

The country people maintain that the Lake of Tortûm ‡ was, up to that date, much smaller than it is at present, and was then deepened by the falling of a mountain into the lake, which also altered the course of the Tortûm Chai, a river passing through the lake and falling into the Jûruck.

The appearance of the locality would appear to me to confirm this tradition, and although my want of geological knowledge does not enable me to form any accurate opinion, I should consider that the whole country to the north-east of the Lake of Tortûm bears evident traces of volcanic disturbances. The walls of the two churches—the one at Ishkirt, the other at Vank (near the Lake of

* See Hamilton's 'Researches in Asie Minor,' vol. i. p. 178.

† It is described in Wagner's 'Reise nach Persien,' chap. vii. Leipsig, 1852.

‡ For description of Lake of Tortûm, see Curzon's 'Armenia,' p. 155; and for description of remarkable geological formations, Valley of Tortûm, see Hamilton's 'Researches in Asia Minor,' vol. i. chap. xiii.

Tortûm)—are cracked in the manner I should be inclined to expect from the action of an earthquake; and I would mention a remarkable rift known in the country by the name of the Dunya Buzurgu (Greatness of the World): this rift splits the mountain from top to bottom, and is about fifteen feet broad at the entrance. It took me from twenty minutes to half an hour to ride through it. The strata on the opposite sides correspond, and though a small stream flows through it, I should think, from its depth, the chasm can hardly have been formed by the action of water.

After careful inquiry on the spot, I was unable to ascertain that shocks have, within memory, been felt in the valley of Tortûm, or in the districts to the north-east; and I am inclined to believe that the slight shocks which I have above mentioned as of frequent occurrence, are (except as they may form part of a wider system) confined to the town and plain of Erzerûm; and, I am disposed to think, are scarcely felt in that part of the plain which lies to the north of the branch of the Euphrates, which divides it into two portions.

I have, however, ascertained that within the last two years shocks, but apparently slighter in character than those experienced in this neighbourhood, have been felt at many points in the area, which would be bounded by lines drawn between Erzerûm, Bitlis, Van, and Bayazid; but I am unable to collect sufficient information to connect the dates or directions of such shocks with the dates or directions of those experienced here.

In conclusion, I may state that many buildings of solid construction have—for instance, at Van and its neighbourhood (about 200 years ago), at Bayazid (about 60 or 70 years since)—been destroyed, or have severely suffered by earthquakes, although the shocks experienced of late appear, in this part of Turkey, to have been most severe in this immediate vicinity.*

X.—*Journey to Abyssinia in* 1862. By S. W. BAKER.

Read, November 24, 1862.

THE country between the Rivers Settite and Gellabat has never previously been explored. I have, however, worked through every portion in daily hunting for five months on the Settite, Salaam, and the Angarep, the other portion of the year having been passed in following the course of the Atbara into the Nile, and subse-

* Monsieur Abich, a distinguished Russian Geologist, has recently published an account of the earthquake at Erzerûm, of June, 1859, and the earthquake at Schamaki of the same period.

quently reaching the River Rahad, from Gellabat, and thence by that river and the Dinder and Blue Nile to Khartúm.

The country treated of in this communication lies between 12° and 16° N. lat., and 35° to 38° E. long. From 16° to the north all is desert. An approach from that point to the south produced a rapid change in the character of the country. Immense flats of rich soil commence about 50 miles north of Cassala, the capital of the Taka country, which, being uncultivated, appears as a desert in the dry season, but is luxuriant in vegetation after the rains, forming the pasture-grounds of the Hadendowa Arabs.

The River "Gash" entirely loses itself in innumerable crevices and subterranean channels, having no outlet, nor any communication whatever with the Atbara River, as erroneously marked upon some charts. Although during the rains this torrent is between 500 and 600 yards wide, opposite Cassala it is not more than four or five deep, and the volume of water, although great, is insufficient to overcome the porosity of the soil, cracked into wide fissures of many feet deep by the sun acting upon a saturated loam. It divides into many hundred streams upon reaching the dead-level, and is entirely absorbed, supplying wells at 46 feet depth, plenteously throughout the dry season, in the desert between Goz and Cassala.

The porosity of the soil in this part of Africa is so great that none of the large rivers which flow from the Abyssinian range have sufficient strength to reach the Nile during the dry season; their springs being confined to the mountains, they become exhausted in their long course through a flat and thirsty soil. The river, which is a noble stream some 60 miles from the mountain-range, gradually decreases until it becomes a thread, and at length disappears in the broad sandy bed, which is full during the rains.

The great tributaries of the Atbara, the "Settite," "Salaam," and "Angarep," flow throughout the year, but the whole of their waters are absorbed by the sands of the Atbara during the dry season. The latter river-bed is between 400 and 500 yards wide at its junction with the Nile at Damer, but at many other points it much exceeds this width, with an average depth during the rains of about 35 or 40 feet. The Settite is actually the parent or main stream, as it flows throughout the year, and is far superior in length and breadth to the higher portion of the Atbara, beyond the junction of the "Salaam."

The Rahad and the Dinder in like manner lose their waters before joining the Blue Nile.

After leaving Cassala and striking due west, I again met the Atbara, and followed its course as far as Sherif el Ibrahim. The

whole country is the richest loam; immense flat prairies of high grass interspersed with mimosas, but devoid of large trees. All these districts are eminently adapted for cotton.

These great prairies of flat land extend from the Atbara to the River Rahad and to the Blue Nile; the whole might be cultivated with cotton, the patches now grown by the Arabs succeeding well.

The west bank of the Atbara is peopled successively by various Arab tribes—Bischareen, Jaleen, Shukericah, and Dabáina; these are all under Egyptian rule.

We now cross over to the east bank at the Settite junction, opposite the village of Tomat. This is occupied by another tribe, the Hamran Arabs, who, although forced to pay tribute to the Egyptian Government, lean more towards the robber chief "Mek Nimmr."

The hostilities of these tribes, and mutual fear, renders the magnificent country bordering the Settite and extending to Gellabat uninhabited.

Having left the rich but monotonous flats of prairie on the west of the Atbara, the eye is delighted with the grand chain of mountains, from 5000 to 8000 feet elevation, forming the S.S.E. boundary to a lovely park-like country of undulating ground, diversified by noble rivers of clear water, streams, rocks, woodland and prairie, all arranged as Nature alone can order it. Throughout this lovely country there is not the foot-print of a man, unless a party of honey-hunters venture upon a few days' hunt from the Tokrowris district.

The River Salaam rolls in a broad deep stream of some 200 yards, through overhanging woods and rocks and precipices; and, man being absent, game is plentiful—including elephants, rhinoceros, giraffes, lions, buffaloes, and many varieties of antelopes; while all the rivers abound with hippopotami.

Although the entire country is more or less interspersed with trees, none are of sufficient size to be called timber, except those which grow on the banks of streams.

The wood of the Baobab or Homr'r is useless. This tree is plentiful. The largest round tree I have measured was 51 feet 6 inches in circumference; the bark is a valuable material for sacks and cordage.

Throughout the lands adjoining the Settite the most valuable kinds of Gum Arabic are in profusion; gathered at present by the baboons, as there are no inhabitants.

The sudden bend of the Atbara to the south-east divides the districts of Guddabi and Gellabat. The latter is the "Ras el Feel" of Bruce.

Gellabat is the chief town of the Tokrowris, and is a considerable market; large quantities of honey, wax, cotton, hides, horses, and cattle being collected on the market-days bi-weekly.

The cotton is cultivated by the Tokrowris principally, although much is supplied by the Arabs.

The Tokrowris are settlers from Darfour, who, passing through the country during their pilgrimage to Mecca, have remained as emigrants. These men are more industrious than the Arabs, and, were they assured of protection, would shortly form large settlements and cultivate cotton throughout the beautiful country between the Settite and Atbara.

After the rains, the Egyptian troops will, I believe, make an expedition against Mek Nimmr; this nest of villains removed, there will be an opening in the country.

From Gellabat I went due west, reaching the River Rahad near the mountain "Hattowa." This river has not been examined further than about 70 or 80 miles from Rhanay; thus no European had ever been through the country I now reached. It was a vast flat of rich land, inhabited by wandering tribes of Arabs during the dry season, but deserted during the rains; no permanent habitations.

About 70 miles lower down, much cotton was grown, and tobacco, all of which is sent to Abyssinia.

A good stream was rolling forward at the first point I reached, but this was absorbed within 50 miles.

There are no rocks in the Rahad, but its deep bed has the appearance of a canal. The great objection to its navigation during the rains is its tortuous course.

After following its course for 140 miles, I crossed the river Dinder, then to the Blue Nile, and along its banks to Khartúm.

APPENDIX.

Route of S. W. BAKER, 1861-62.

Copper is in large quantities in the angle of the route between H.* Ma Serdi and H. Shahalla.

There are mountains in the range higher than the peaks enumerated, but I could not learn their names; the country being uninhabited, it was difficult to gather information. I imagine some of the mountains exceed 8000 feet.

The lower range of mountains are chiefly basalt, with some exceptions, which are granite; such as those at Cassala, and the three isolated hills marked in the Basé country.

The Settite flows through extraordinary masses of granite, forming water-

* H. signifies Hor, a stream or ravine.

falls and tremendous rapids for some miles on either side the junction of the Royān.

In most parts the Settite flows through deep beds of conglomerate of large pebbles, firmly cemented together by a calcareous deposit and sand. This is in many places upheaved and broken into large masses by protruding granite.

In that portion of the Settite, long. 36° 10′ E., are cliffs about 100 feet high, of a peculiarly pure limestone, some snow-white, and others a bright rose-colour. This limestone again appears in the small range of mountains in Mek Nimmr's country, near the H. Shaballah. I have seen it in no other place.

I found lead ore by the Settite in white quartz, twelve miles west of the Royān.

XI.—*An Account of an Exploration of the Elephant Mountain, in Western Equatorial Africa.* By R. F. BURTON, Esq., F.R.G.S., Gold Medallist R.G.S., H.B.M. Consul Fernando Po, &c.

Read, April 27, 1863.

CAPTAIN LUCE, senior officer Bight division, having placed at my disposal H.M.S. *Bloodhound*, Lieutenant Commander Stokes, I resolved to visit Batonga. The weather when we set out was rough and stormy, nor did it improve during the 13 days between the 11th and the 23rd September. The Batonga country follows the rule of the Gaboon, having two dry and two rainy seasons; and the latter rains were commencing here, whilst ending in the northern parts of the coast. With a southerly wind and a rough sea, we steered a S.E. and by S. course, and at 6 P.M. anchored in Great Batonga Bay, a mere roadstead. The *Bloodhound* lay 1½ mile off the land, in 5 fathoms water, lat. 2° 52′ N., and long. 90° 52′ E. At times a heavy surf breaks upon the whole of the lee-shore, from Camaroons River to Corisco Island; the landing is execrable, and many lives and canoes are lost. Lieutenant Dolben's gig was swamped, and we never went on or put off from shore without risk. There is, however, no difficulty in making Batonga Bay. At some distance, say 10 miles, it appears as a large headland, bounded north and south by the sea, and the small cascade of the Eloke, or Great Batonga River, offers a conspicuous land-mark. When nearer, four tall cotton-trees (*Bombax*), looking like gigantic palms, decorate the site of the sheds, representing the only European factories—those of Messrs. Laughland, and Messrs. Burford and Townsend. The aspect of the coast is by no means unpleasant. The country known to us by the names of Batonga or Banōkō—properly the names of important tribes—begins at the south shore of the innermost recess of the Bight of Biafra, and extends southward to Cape St. John: in this direction, the limit of the Consulate of Biafra. It is a long band of densely-wooded lowland, based upon a yellow line of sand, broken in places, which appear

to be the mouths of small rivers. Here and there fields of a lighter green give evidence of plantations; and the clusters of brown huts prove it to be not deficient in population. The sea-shores are dark masses of schistose gneiss, against which the waves break and spend themselves. Inland the horizon is bounded by a line of low blue hills, in crescent shape, its gibbous front towards the east, similar to those found at the head of the Gaboon River, and probably part of the same line. After visiting them in sundry places, I conjectured them to be the outlying range of the mysterious Sierra del Crystal, which may represent the Western Ghauts of the African Peninsula. No traveller has yet crossed it. From inquiries among the natives, however, I believe it to be placed, as in East Africa, from 100 to 150 miles inland, and to be a primitive, barren range; whereas all its outliers, between the main chain and the sea, are densely wooded to their summits. The most remarkable of these subranges is the "Elephant Mountain," which is clearly distinguishable from the roadstead, bearing south-east, and distant apparently 10 miles. Curious to say, there is a similar formation on the East African Coast, with no great difference of latitude. The latter, however, enjoys the celebrity of Arrian's Periplus; the Periplus of Hanno nowhere alluded to the Western ἐλεφαντος ὁρος. At a distance the resemblance to an elephant *couchant* is striking. When the clouds clear away, a long chine extends high above the lowlands; sundry depressions form the ear and neck; a swelling on the right of the profile, dipping towards the southern base, is the trunk; and the body everywhere bristles with trees. At this season it is rarely well seen. I need hardly say that it has never been ascended by Europeans, some of whom have resided for years without exploring a mile of the interior.

On 12th September, 1862, the morning after our arrival, the *Bloodhound* was surrounded by a flotilla of the little canoes for which Batonga is celebrated. Their invention is probably due to the surf, which is fatal to ordinary ship's-boats. The material is cotton-wood, or some other light timber, painfully hollowed out with a native adze; sometimes carved and decorated with red paint, yet selling for 1 dollar each; the weight rarely exceeds 15 lbs., the length is about that of a man. The thinnest of cross-bars connect the sides, and the proprietor sits upon a bridge of wood about an inch thick, curved shaped, and a little raised above the gunwale. Nothing can exceed the skill with which these people launch through a heavy surf. The dwarf vehicle is placed upon the water's edge, the paddler mounts it as he would a horse, pushing forward with his feet till he sees a break in the waves; he then shoves off vigorously, and uses, as soon as possible, a paddle, corresponding in size with the canoe. When the paddle is once

out, a capsize rarely takes place; the legs are allowed to hang over the sides. The vehicle is buoyant as a water-bird, and *if* it turns over, it is easily righted by men who are almost amphibious. Backing out is managed by a succession of dexterous kicks, and the legs are drawn in when speed is desired. Sometimes a limb is lost by sharks, but these are rare in the Batonga waters. From afar, the fisherman appears to be sitting buoyant upon the waves; and when there are rollers, nothing but his head protrudes above the surface. When beckoned on board, he will climb up the side with his canoe and paddle under his arm, for fear of a theft. Our visitors brought a small supply of long and broad-bladed knives, barbed and jagged spears of native iron, large wooden and brass-wired pipes, and pipe-bowls, shaped like those of the Sinaitic Arabs.

After visiting the supercargoes, and hearing their grievances, I invited the two chiefs of the maritime country to a palaver on board the *Bloodhound*, and proceeded with Lieutenant Stokes in his gig, manned by four Kroomen, to inspect the falls of the "Eloke River." For about 3 miles we rowed through a tumbling water that foamed upon the outlying rocks, along a yellow strip of sand, backed by patches of black and leek-green verdure. After an hour we turned the point, and suddenly found ourselves in a mass of breakers, that rose as if by magic from the comparatively smooth surface.

On our return, about 5 P.M., the bar was breaking right across under the freshening breeze, and though the gig escaped being swamped, my aneroid and sketch-book did not. Landing on the smooth sand, we walked a few paces, and called at Messrs. Hutton and Cookson's factory, tenanted by a Mr. Hardy, acting under a native "trade man" from the Gaboon. The factories are wretched native houses, fitted with a few articles of European furniture. Although the country is rich, there is no trade but ivory, which comes from considerable distances; elephants being rarely found within four days' march of the coast.

We then proceeded to the Falls of the Eloke River, which, though dignified by the name of Cataracts, are mere fish-leaps.

The weather was unpropitious; but Lieutenant Stokes and I could not resist a desire to explore the "Elephant Mountain," and to obtain, if possible, a view of the unknown interior. Travellers of the Parkian Age always preferred the "dries" for travel, holding the rainy to be the deadly season. We moderns have inverted our belief. It is well, however, to remark that the rains bring with them one deadly scourge—swollen and ulcerated feet. Our three days' journey lay through a wholly untried land; a country which had never seen a white man, which had never been traversed by a

stranger; the details therefore, though of little intrinsic value, may be considered interesting, as a proof how easily an explorer might penetrate into this part of Africa.

Having prepared our few necessaries, we landed with the inevitable wetting, on the 14th September, 1862, and repaired to Messrs. Laughland's factory, where we were hospitably received by his agent, Mr. McCallum. A rough and noisy crowd gathered round the door to stare, laugh, and, if possible, worry us. By way of diversion, we proceeded to call upon a neighbouring chief, whose village lay but a few hundred yards distant. Our route lay along the sands, here intersected by a streamlet of sweet water, like those of the Gaboon Coast. On the way we saw some fine bullocks, which the people will not sell. The villages show a few animals—goats, fowl, and Manilla ducks. Hereabouts we came upon a group palavering under a fiery sun, and were harangued by a Conservative in a sky-blue coat. We then ascended a clay-bank, and, passing through scattered plantations, we entered the village of Great Sandy. He is at present the village war-chief, second and successor to King John; but he makes no secret of his resolve to become monarch of all he surveys, and, to make favour with the multitude, he has attempted to maltreat Europeans. I found in him a type that is met with, though very rarely, in the Negro race, and which was new to me upon arrival on the West African Coast. The first case seen was in Brass Town. "Sandy," is a xanthous man, with yellow skin, red, not yellow, hair, light-brown, not pink eyes. He is clearly not a Mulatto, nor does he at all resemble the Albino; of the latter, there is said to be a village not far in the interior. A small child sitting by his side was of the same complexion, and a woman who passed by the door showed similar characteristics. This "sandy" temperament has not, to my knowledge, been noticed by African travellers. The people, as a race, were by no means remarkable in appearance: they had their teeth filed, and they suffered apparently severely from cutaneous diseases. In the interior we afterwards saw a solitary case of goître, the victim being an old man. The war-chief brought for us boxes, and placed them under the shady eaves; preferring himself to perch upon a horizontal pole, supported by forked uprights. He showed scant civility, but sent for "Young John," son of "Old John," who soon declared that "woman palaver for bush" prevented his acting guide. While affairs progressed thus unsatisfactorily, I inspected the village. It is built after the fashion that obtains from the Camaroons River to the Gaboon country, and how far south is to me unknown. A single long street forms the whole, and the beginning and the end are occupied by transverse palaver-houses, with bamboo settees and sitting-poles, and differing from

the others only in that they have no doors. The huts in which poor men lie are mere sheds of matting. The wealthier build basket-like walls of bamboo wattle (*P. vinifera*), on floors often sunk below the surface, and roof them in with mats. We took scant leave of the churl Sandy. Our visit, however, had done some good. A "trade boy," which means a trader in embryo, perceiving that we were determined to try our fortunes, followed us, and offered himself as guide; warning us, however, that he could bring us no recruits. The services of Mtonga, alias Joseph, were accepted; 3 dollars being his remuneration, in case of success. At 7 A.M., on Monday, the 15th September, we set out, between two downpours of rain, a fearful nimbus purpling the eastern sky. Our party consisted of Lewis, the head Krooman, with two of his "Lord Howe's boys," bearing muskets, and two Kroomen hired at the factories, to carry our little outfit of cloth, tobacco, and well-diluted liquor. The youth Swanzy, who acted as little footpage, and Mtonga, whose arm was solemnly held up by old King William, in sign that he had made him over to us, body and all, concluded the party.

As we were passing through the plantation villages, outside the maritime settlements, our attendants were somewhat discomposed by the ominous wail for the dead, with which some of the village women tested their poor nerves. Entering the bush I was reminded of the scenery with which Corisco Island pleases all visitors; a rolling land, where a wonderful variety of trees, amongst which the wild mango is conspicuous, spring from the densest and darkest bush, deep shady hollows, waving ridges of ground, and then corresponding depressions, the latter always provided with a cold streamlet, muddy and fetid near the shore, pure and sandy inland. Water was everywhere but too abundant: at this season of the year it flooded the path. The Europeans, however, drink the produce of the nearest pool, and complain of frequent deaths by dysentery, when by sending a few miles they might enjoy the purest element. After half an hour's march we reached the villages of Jambive, inhabited by bushmen, who are mostly subject to the maritime people. Another thirty minutes, and a broad water led us to Mowesan: these names, it will be observed, are rather of districts, than of distinct settlements. "Tuka," a flowing stream, waist-deep, lay in our way, after which appeared stone-scatters of pebbles, and rude black conglomerate, in places forming natural steps. The path ran like a narrow link through the densest possible bush; here and there it was bordered by the usual elephant-pits, the East Indian Ogi—the traps of bent tree, common to this part of Africa, and bushmen's graves of small dimensions, covering pits, and basins, and evidences of Fetish, in two short

parallel railings of small sticks. During the whole march we saw not a single head of game; and, as might be expected, where guns are common, animal life, save vermin, was exceedingly rare: the bark-like hoo-hoo-hoo of the touraco, a crested jay of rare beauty and stupidity, being the only sound that broke the silence of the luxuriant waste. Frequent tracts of the tallest grass, here the evidence of fallow land, and clearings in the bush, showed, however, that all was not desert. At 8·50 A.M. we again crossed the Tuka rivulet, athwart whose glassy stream mica was visible. Shortly afterwards we saw, deep below us to the left, the swift brown current of "Madiba ma Eloke," by the white man called the "Batonga River." At 9 A.M. we entered the settlements of Sabale. As usual, they were three in number; the first two, small and scattered, acting like approaches to the last, which is usually the "King's" head-quarters. The good Mtonga attempted to hurry us through without paying black mail; but we soon saw the head of the Indian file stopped short, by an angry host of spearmen and musketeers, shouting, gesticulating, and flourishing their weapons. An uninitiated person would have expected the instant massacre of the whole party: Lieutenant Stokes and I contented ourselves with retiring into the palaver-house, where, if necessary, we could use our weapons to advantage, and left black man to settle things after "black man's fashion." On these occasions to force a way would as inevitably lead to bloodshed, as to break the *consigne* of a French sentinel. The whole affair was settled with five heads of tobacco: of these each contains three leaves, now worth singly a halfpenny in invoice price, and about double in retail. The detention lost us an hour. At 10·45 A.M. we resumed our march. After wading through another long water, called the Wásá, we ascended a slope, and presently saw straight before us Nángá, the Elephant Mountain. It had lost, however, the peculiarity of appearance which gave it a name when viewed from the seaboard, and now appeared in the shape of a regular saddleback; the pommel being its southern extremity, and seemingly perpendicular. At 11·45 A.M. we entered the settlements of Mámbe Nángá, whose polite king ushered us into a private lodging, after a *séance* of the briefest upon the bamboo settees of the palaver-house. Here we halted for breakfast, fairly telling the people that as we intended to ascend Nángá on the morrow, we could not night in their village. The river was to be crossed; and the experienced traveller never leaves, if possible, an obstacle for the beginning of a day's march. They, on the other hand, did their best to overrule our plans. The African has three reasons for detaining the guest. *Firstly*, he wants rum, tobacco, and cloth; *secondly*, he holds the white man's visit to be an honour; and *thirdly*, he is jealous of, because he hates, his neighbour.

The tactics of our hosts were amusing. The king brought his best fare—a fowl and plantains; promising us, if we would stay, as much more as we pleased. In Africa there are three degrees of dish to visitors, showing the comparative wealth of a tribe. The first is a bullock, the second a goat, the third a hen or a bunch of plantains. The people, gathering to stare at us, placed directly before the open door all the virginal and matronly beauties of the village. Still we were inexorable. The women of the bushfolk are, like those of some Niger tribes, as tall and stout as the men; sometimes larger, and, to speak plainly, ugly. The hair is fantastically and variously dressed. It is never, however, long, or worn *à la Diane*, as amongst the Fan. The swift brown river, which passes by the southern extremity of the Elephant Mountain, is here deep, and twenty yards broad, running under upright banks of stiff yellow earth, which are capped with a profusion of beautiful vegetation, making the reach a model of African potamology. How to cross was the question; the people had assembled in crowds, and, as all know, there is always trouble and delay at these vexed places. In parts of Gorulia, money is left upon the ground, rather than pay the road tolls and ferry dues. At first we saw only cockleshell canoes, and one was capsized before our eyes. A vessel on a larger scale stood on the bank; but the Ancagonian Daw to whom it belonged summoned her sisterhood, and bore it off, whilst a son of the house bore away the paddles. At last Mtonga and tobacco prevailed against all obstacles, and we were permitted to embark in a craft through whose bottom rose little jets, like those that spout from a pierced hose. Ferried across without accident, we climbed up the right bank, aided by a pull-line. Following for a time the river's course, we then struck out inland—northwards. The country was the normal bush, with here and there a large and recent clearing. It is rich in cardamoms, whose lovely flowers startle one, as they appear to spring from the foul soil, whilst the fruit is shed in all directions. This plant we afterwards found growing a few feet from the sea; yet Europeans ignore the fact, and the Batonga men who use it as medicine, bring it, or pretend to bring it from the interior, and sell it dear on the coast. There are also kola nuts (*Sterculia acuminata*), growing wild, but unused and unknown. The India-rubber vine hangs everywhere neglected; the palm-oil tree is allowed to shed its fruit on the ground; and the cocoas, which might be greatly multiplied, are used only for food. There are bees in every forest, but no one ever dreams of hiving them. After an hour and a half's walk, we marched through a line of scattered settlements, out of which the bush people turned with a prodigious clatter and clamour; and we established ourselves in the furthest, which was

also nearest to our destination. That day's work had been three hours and three quarters, during which we might have made 7 statute miles; the bearing of the roadstead was north-west, and the B.P. (Fahr.) showed 211° 50′, temp. 83° (Fahr.). A house was soon cleared for storing our property. We then proceeded to the pleasant task of the African traveller's day, the finish-off. We did not, however, succeed in preventing a red bandana from being stolen from Lieutenant Stokes. Our entertainers had us all to themselves. The boys, after often but vainly attempting to rob us, wrestled; the women enjoyed our smelling-salts; and at dusk all the village, having obtained a bottle of rum, repaired to the palaver-house for a dance. The performance, which included both sexes, hardly bears description. The band consisted of a nyeng—two hollow iron cones, joined at the base, and beaten upon like a tom-tom—a common African instrument; wooden clappers, not unlike castanets; and the drum of the country, a large cylinder with a narrow longitudinal slit above. Loud above the clatter, rose the song, and fast and furious under the effects of liquor waxed the *bal immoral.* Blessings of Bilam, or rum, are very unequally distributed in these regions. The people of the seaboard are surfeited and thoroughly demoralised by it. Once industrious and comparatively honest, they began the evil practice about twenty years ago, and are now become thieves and idlers. It even tells upon the population, which in these regions is very prolific. The villages still literally swarm with children, and a barren woman is called a "Goat." The bush people never see rum, except on the rare occasions when they bring ivory to the beach: consequently they look upon it with the greediest eyes, as it is their god. An explorer ought carefully to avoid carrying with him spirituous liquors, which are heavy and soon expended, besides causing all kinds of annoyances, and perhaps dangers. Even tobacco should be sparingly taken. The safest outfit is in cloth and beads. We slept—if I may use the word—upon bedsteads extemporised out of the host's trade-cases; the sand-flies began operations before dark, the flies followed, and the mosquitoes feasted the rest of the night upon us. We arose at 5 A.M. on the morning of the next day, September 16; a thick cloud-mist now concealed the fair proportions of the Elephant Mountain. By Mtonga's desire, we discharged the Enfields into the nearest trees, and reloaded. He vauntingly pointed out to the gazers the folly of opposing such weapons. At 6 A.M. we left Lábele on our return, not without some trouble, as all viewed the departure of rum and tobacco with sentiments of sorrow and indignation. Mtonga threw a leaf to the housemaster, which gesture appeared to appease him; we could obtain no explanation as to how the spell was so potent.

Passing to the S.E., through the entire plantation of banana, we descended into a deep hollow, and crossed the brook Nyáne, pursuing for some distance its left bank. The water is deliciously cool and clear; its sands are golden with mica, and the bits of rounded quartz that strew the bed show that it drains a country of primitive formation, as the Sierra del Crystal is reported to be.

We had presently rounded the end of the Elephant Mountain, and began an ascent from the south-east, instead, as we expected, from the west: the sequel showed that Mtonga had chosen the better path. The incline was steep, and, as we mounted, the forest thinned out and the air became sensibly cooler.*

Presently the ascent became so steep that we were compelled to bring hands to the aid of feet: in places the angle must have been 45°. The surface was of shallow mould, overlying slippery clay with outcrops of rock, and a sparse growth of small but tough trees, which afforded a firm hold. The ant-hills were of the pagoda shape noticed by travellers in the Gaboon country; small earth-coloured mushrooms, sometimes adorned with three tiers of eaves, and tenanted by a small brown species. In one part, where a wall of rock some 30 feet high rose perpendicularly across our path, we thought this trial a failure. We managed, however, to creep along a ledge that turned our difficulty. The scrambling required frequent rests; though short, it was sharper than anything I had seen when ascending the Peak of Cameroons or Fernando Po. At 9 A.M. we stood breathless upon the summit, where we were followed by some fifty people, principally the tail of a Bush King, who had accompanied us with the view of making our rum and tobacco prisoners for the night. Having distributed homœopathic doses, amidst a tremendous hubbub, we broke our fast and then inspected the place. We had marched that morning 3 hours, but probably not more than 4 miles, which would make the routal distance from the Factories to the summit of Mons Elephas, 11 miles. Our halting-place was upon the summit of the saddleback's pommel, which is composed of upright stone blocks and trees. The barometer showed 209°, temp. 75°, thus confirming the height trigonometrically given in the chart, 1707 feet.

A stream of cold water was not far distant, the air was delightful,

* As in every place, except Lagos, upon the West African coast, as far as I have visited, there is for Batonga the promise of a local sanitarium, when the land shall have become quasi-civilized, and the bush and jungle, here man's greatest enemy, shall have been improved off. So far from doubting the future of Africa, I become every year more certain, but less sanguine, that it *can* be rendered healthy for Europeans. This *will* be done,—but when? As yet the work has hardly commenced.

and already at this altitude the sun and heat, so sweltering in the lowlands, became endurable. After cutting our initials upon a tall tree below the pommel, we proceeded to the descent. The Bush King, who was accompanied by his brother carrying a fowl —manifestly our dinner *in posse*—led us down the western face of the mountain; and we followed, nothing loth, feeling somewhat aggrieved that we had been led round the south-eastern end. It was a short cut; but if the ascent was bad, the descent was worse. Had we attempted this direction, two days would have barely sufficed. There was no path, save sometimes a deep crack in the rock, or a rainworn groove in the clay.

We now had to tread like rope-dancers on fallen trunks; most suspicious place for snakes and other vermin. For slighting a convenient cave in the rocks, we were punished by a heavy shower at 11 A.M.; and it was followed by an outburst of sun, which, if *coup de soleil* were not almost unknown in these regions, might have excited apprehension. About noon we reached a new clearing, whence, descrying with pleasure the now unclouded sea, we disposed ourselves for a halt. The bush workmen, however, clamoured for tobacco; refusing which, we re-started. There was no improvement in the descent, although we were now approaching the lowlands. Long tracks of muddy water, under a dense fog, now took the place of ridges and gulleys.

The day's work had been severe, and told upon our untrained frames. After passing a pleasant evening, we retired into the society of the mosquitoes; and at 2 A.M. Lieutenant Stokes was attacked by fever and ague. I need not describe our return march, which he effected with pain and difficulty. The sun, the violent rain, and the wading through deep water, were severe inflictions to a man whose pulse was at 100.

We reached at 11·15 A.M. the hospitable doors of Mr. McCallum's factory. The *Bloodhound* lay in a healthy position, yet an awful plague had declared itself on board. Our first shock on return was to hear that the commander's steward, whom we had left slightly unwell, had died after three days' illness of yellow fever, and was awaiting burial. Nothing therefore remained but to quit Batonga without delay. The fatal sickness admitted no delay for investigation. I conveyed Lieutenant Stokes on board; and at noon, on the 18th Sept., we stood in detestable weather out to sea.

XII.—Dr. Livingstone's *Expedition to Lake Nyassa in* 1861-63.

Read, November 24, 1863.

1. *Extract from Private Letter from* Dr. Livingstone.

"River Shiré, 7th Dec. 1861.

"We have been up to Lake Nyassa and carried a boat past the cataracts to explore by. Went along the western shore; it is very deep; from 20 to 50 or 60 miles broad, and over 200 miles long (225). It was excessively stormy, and you must not despise us for failing to find out all about the Rovuma. We were on the west side, and could not cross in a little open boat at the period of the equinoctial gales: then we could get no food in a depopulated part of the country near the north end. Pirates live on detached rocks, and human skeletons and putrid bodies were lying everywhere. It was a fair dead lock for us, and we came back. Another lake, called Moelo, was reported by two Arabs we met on the lake. They came from a place called Katanga, which seems to be S.S.W. of Cazembe, and had come down to buy cloth at Nyassa."

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2. *Extract from Letter of* Rev. H. de Wint Burrup.

The following is from the lamented Mr. Burrup to the Bishop of Cape Town, and is invested with melancholy interest from the fact of its being the last letter written by the reverend gentleman:—

"Magomero, 18th Dec. 1861. Lat. 15° S., long. 15° 35′ E.

"We are now about to start on an expedition to the mouth of a river (Reno) which rises in the Melanja Mountains and runs into the Shiré. This route makes the distance to the mouth of the Zambezi much shorter, and we do it at the suggestion of Dr. Livingstone; so it will be a great thing if we succeed. I wrote to you from Quillimane. Since then we have, as you will have perceived, had the extreme pleasure and satisfaction of first joining the *Pioneer*, and then the Bishop, and afterwards our whole party, at this our "new home," about sixty miles by a hilly route from the Shiré. We started from Quillimane on the 12th October in two large boats ourselves, and our baggage in several canoes provided by our good friend Major Tito, who went with us as far as the Zambezi. Our route was up the Quillimane River, which is a fine river, and forms part of the Zambesi about seventy miles from Kongone during the wet season, but has a dry bed of about twelve miles during the rest of the year. We kept to the river Mutu (the name of the Quillimane River) for two days, and then turned up a

tributary of the Mutu named Quarquar. We kept to the Quarquar for six days more, and then landed at a point about twelve miles from the left bank of the Zambesi. We had our goods carried by about fifty men across these miles, and walked there ourselves under a burning sun. The name of this point on the Zambesi is Maruru, a good-sized village about two or three miles below Mazaro, a point on the same bank more generally known. On the 22nd we started in two canoes—one small, the other large—with crews that we had not much confidence in, as they were "scratch crews," and not the tried men we had to the last expected in the shape of Major Tito's slaves or "*servants*." We were on the Zambesi four days. One night we slept in a very good house beautifully situated on the right bank, belonging to one of our friends at Quillimane; the other three nights we slept without covering. On the fifth night we slept on the left bank of the Shiré, about three miles up, which is throughout, as far as Shibisa, except in one or two parts, a more rapid and deeper river than the Zambesi, as far as we made the acquaintance of the latter. When we had been four days more in the Shiré we became anxious to have some more accurate information of the whereabouts of the *Pioneer*. We had been unable to gain any such precise information before we started, as nobody knew, and the accounts the natives gave varied so much (from three to ten days' distance) that we decided that the small canoe should go forward to reconnoitre and return as soon as possible. Besides, our "scratch" crews gave us considerable trouble and anxiety, and we felt too much in their power, for they had *mutinied* early in the voyage and were beginning to show symptoms of restlessness. We determined that I should go, and, starting on the 1st November, I had the great satisfaction of hailing and boarding the *Pioneer* on the 8th. On the day after I reached the ship, by a remarkable coincidence, the Bishop Mackenzie arrived to see Livingstone before his starting. We started (the Bishop and myself) for Magomero, and arrived here in four days.

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3. *Letter from* MR. CHARLES LIVINGSTONE *to* SIR RODERICK I. MURCHISON.

Read, November 24, 1862.

"River Shiré, E. Africa, 8th Jan., 1862.

"MY DEAR SIR RODERICK,

"A few days after our return from setting the Bishop over the Ma-Nganja, we started for Nyassa with a light four-oared gig and a score of blacks.

"We hired natives to carry the boat past the cataracts for a

cubit of calico a-piece per day, and then launched her on the broad and deep waters of the Upper Shiré. From this to Nyassa (60 miles) the current seldom exceeds a knot an hour, while from the cataracts to the Zambesi it is from 2 to 3 knots.

"Owing to marauding parties of Ajawa on the left bank, we kept, with our land party, on the west side of the lake, and saw upwards of 200 miles of its length, and would have seen it all, but unluckily food could not be obtained at any price; the country we entered had been swept by a war of extermination, and, instead of the thriving villages of other days, we found burned ruins, human skeletons, and a few starved survivors, who generally fled as soon as they perceived us.

"Near its southern end the lake is from 12 to 15 miles in breadth, but it widens as it goes north; the right bank making considerable westing, until it attains a width of 50 or 60 miles.

"The depth is indicated by the different colour of its waters. Near the land, and varying in width from a few yards to several miles according to the nature of the coast, is a belt of light green, and to this is joined in a well-defined line the blue or indigo of the ocean, which is the colour of the great body of Nyassa.

"Not far from where we turned back, and about a mile from shore, we could find no bottom with over a hundred fathoms of line out. The temperature of this mass of water, near the end of September, was 72 , and the air was always cooler on the beach than farther inland. We visited the lake in perhaps the stormiest season of the year (September and October), and were repeatedly detained by severe gales. At times, while sailing pleasantly over the blue water, with a gentle breeze and under a cloudless sky, suddenly, and without any warning, would be heard the sound of the pursuing gale, as it came roaring on, dragging myriads of white-crested waves in its excited wake. We got caught, one morning, in a heavy gale. As a sort of forlorn hope the anchor was let go in seven fathoms a mile from the land, with the sea breaking, even far out beyond us. The waves we dreaded most rushed upon us in squadrons of threes, with a few minutes of comparative quiet between the successive charges. Had one of those almost perpendicular-sided masses broken on our frail bark nothing could have saved us, but, to our heartfelt relief, as on they came with resistless force they broke before reaching us, or on one side, or behind. For six mortal hours we faced the fierce charges of those terrible trios, not knowing but some one of their waves might be carrying our fate on its hoary and uplifted head. A low, dark cloud came slowly from the mountains, and for hours hung directly over our heads. Our black crew became so sea-sick as to be unable to sit up, and the bow-oar had to be constantly at work to keep the boat's head to

the sea. The natives, with our land party, stood on the high cliffs, commiserating the unhappy fate of the poor white men, and exclaiming, as the boat was hid by the waves, "Ah! they're lost! they're dead!" In the afternoon the gale moderated, the anchor was soon up, the glad boat ran for the land, dashed through the boiling surf, and in a few seconds was safe on the beach.

"Lake Nyassa receives no great affluents from the west. The rivers we passed did not appear to be bringing in as much water as the Shiré was carrying out. Distinct line-marks on the rocks showed that for some time during the rains the water of the lake is three feet above the point to which it falls near the end of the dry season. The Shiré and evaporation may account for this fall; but whether these five streams with others, probably smaller, from the mountains in front and on the east side, when swollen by the rains, are able, in the course of a couple of months, to make up this loss, or whether the aid of the large river some natives spoke of as coming from the north-west is requisite, is still an unsolved problem. The Shiré was not in flood this season until the first week in January, and the rains commenced below the cataracts even in the beginning of November.

"The west side of Nyassa is a succession of bays of similar form, as though produced by a common cause, such as the prevalence of north-easterly winds; and each is separated from its neighbour by a rocky headland, with detached rocks extending some distance out to sea. In general these bays have a sandy beach or pebbly shore. The great south-westerly bay has a safe and commodious harbour. A good deal of the land adjacent to the lake is low, sometimes marshy, with numerous waterfowl and some elephants. Eight or ten miles back of the plain are ranges of high and well-wooded granite hills, running nearly parallel with the lake, and presenting in several places magnificent views of range towering behind range, until the distant blue mountains bound the prospect by rearing their lofty summits to the skies. Towards the north the plain becomes narrower, and near where we turned disappears altogether. The mountains then rise abruptly out of the lake, and form the north-east boundary of a high and extensive table-land, resembling the Batoka country, healthy, and well-suited for pasturage and agriculture.

"Never before, in Africa, have we seen anything like the dense population of Lake Nyassa, especially in the south. In some parts there seemed to be an unbroken chain of villages. On the beach of well-nigh every little sandy bay, black crowds were standing gazing at the novel spectacle of a boat under sail; and whenever we landed we were surrounded in a few seconds by hundreds of men, women, and children, who had hastened to stare at the "chiromba,"

or wild animals. To see the animals feed was the great attraction. Never did Zoological Society's lions draw a tithe of such multitudes. They crowded round us at meal times, a wilderness, an impenetrable thicket of negroes, looking on with the deepest apparent interest. The zeal they manifested in order to witness the whole procedure was more amusing than agreeable. The smell of black humanity, in a state of perspiration, is not pleasant while one is eating.

"They cultivate the soil pretty extensively, and grow large quantities of sweet potatoes, as well as rice, maize, native corn, &c.; but in the north manioc was the staple product, and with fish, kept till they attain a high flavour, constituted the principal food of the inhabitants. During a certain portion of the year, however, they have a curious harvest, which furnishes a singular sort of food. As we neared our northern limit, great clouds of what looked like the smoke rising from miles of burning grass, were observed driving in a north-easterly direction across the lake. One morning we sailed from five to ten minutes through one of the clouds, and discovered that it was not smoke, but midges (*ephemerides*). They filled the air to an immense height, and covered the water. All eyes had to be shut and every mouth closed; they fell against the face like fine drifted snow. Handfuls of their dead bodies lay in the boat after she emerged from the cloud. The people gather these minute insects and bake them into cakes, millions of midges in a cake. A midge cake, an inch thick and nearly as large as a Scotch ploughman's bonnet, was brought for sale. It was dark in colour, and tasted not unlike decayed red-herring. Plenty of excellent fish are found in the lake; some of the kinds were new to us. One, called sanjika, somewhat resembles trout, and runs up the rivers to spawn as salmon do at home. The largest were above two feet in length; splendid fish, the best we have ever eaten in Africa. They were running up the rivers in August and September, and numbers of fishermen were actively employed in catching them. Dams were constructed, full of sluices, in each of which was set the fatal trap fishbasket, over whose single entrance might have been written "All hope abandon ye who enter here." A short distance below, nets were stretched across from bank to bank, so that it seemed a marvel how even the most sagacious sanjika could get up without being taken, unless a free passage is left at night.

"In the lake the fish are caught chiefly with nets, but in deep water, some kinds are taken in fishbaskets, lowered to a great depth, and attached by a long line to a float, around which is often fastened a mass of grass or weeds, to serve, perhaps, as an alluring shade for the fish. Fleets of fine canoes are engaged in the lake fisheries; the men have long paddles, and stand while using

them. They sometimes venture out when there is a considerable sea on.

"Perhaps the first impression one receives of the men is that they are far from being industrious, in fact, are downright lazy. During the day, groups are seen lying asleep under the shady trees, and appearing to take life remarkably easy. But a little further acquaintance modifies first impressions, as it leads to the discovery that many of the sleepers work hard by night. In the afternoon they examine and mend their nets, place them in the canoes, and paddle off, frequently to distant islands, or other good fishing-grounds, and during a large portion of the night the poor fellows are toiling, passing much of the time in the water dragging their nets. Many men and boys are employed in gathering the buaze, preparing the fibre, and making it into long nets. When they come for the first time to gaze at suspicious-looking strangers, they may, with true African caution, leave their working materials at home. From the number of native cotton cloths worn in many villages at the south end of the lake, it is evident that a goodly number of busy hands must be constantly at work. An extensive manufacture of bark-cloth also is ever going on from one end of the lake probably to the other, and much toil and time are required before the bark becomes soft and fit to wear. A prodigious amount of this bark-cloth is worn, indicating the destruction of an immense number of trees every year.

"The lake people are by no means handsome. The women are frightfully ugly, and really make themselves hideous by the very means they adopt with the laudable view of rendering their persons beautiful and attractive. The pelele, or upper-lip ornament, is as fashionable as crinoline in other countries. Some are made of tin in the shape of a small dish, and they sometimes actually carry things in them. Others are of white quartz, and give the wearer the appearance of having an inch or two of one of Price's patent candles thrust through the lip and projecting beyond the point of the nose. A few are of a blood-red colour, and at a little distance the lady looks as if she had come off only second best in a recent domestic squabble. All are tattooed, the figures varying with the tribes. Some tattoo their faces after a fashion so execrable, that they seem to be covered all over with great ugly warts or pimples. The young boys and girls, however, are reasonably good-looking. In regard to their character they are pretty much like other people. There are decent ones among them, and a good many are, as they say in Scotland, "nae better than they suld be." If one of us happened to be at hand when a net was hauled, a fish was usually offered. Sailing one day past a number of men who had just dragged their net ashore, we were hailed, and asked to come and get a fish, and received a generous present. The

northerly chief, Marenga, was remarkably generous, giving us large presents of food and beer, both going and returning. Others also made us presents of food. But they are a bad lot at the different places where the slave parties cross. The slave-traders leave a blight and a curse wherever they go. The first question at the crossings invariably was, 'Do you wish to buy slaves?' Never did they make us a present of food: rarely would they even sell it. The slave-trade is going on just now at a fearful rate. An enterprising Arab built a dow on the lake not long since, and is running her regularly across crowded with slaves. He sailed the day before we reached his quarters with a full cargo. As his establishment is in the latitude of Ibo, there can be little doubt but that he is the agent who supplies the Portuguese there, and enables them to carry on the infamous traffic so extensively. When Capt. Stirling, of H.M.S. *Wasp*, called at Ibo last year, the town was full of slaves, hurriedly brought in from the outskirts to ship on board the disguised cruiser, which they had mistaken for a large slaver expected on the coast about that time. The chagrin of the Portuguese Governor on discovering that it was an English man-of-war was so great, that he entirely forgot to treat the Captain with common courtesy, and did not even ask him to sit down.

"In some things the people of Nyassa are as far advanced as the most highly civilised communities. They have expert thieves among them. On our way up we had a disagreeable visit from some of this light-fingered class. They called one morning when two of us were down with fever, between the rather early hours of three and five, and, notwithstanding a formidable array of revolvers and rifles, quietly relieved us of a considerable amount, while we all slept ingloriously throughout the whole performance. We awoke, as honest men do, at the usual hour, and the fact of our loss soon burst upon us. 'My bag's *gone!*' cried one of the victims, 'and all my clothes! and my *boots*, too!' '*Both* of mine are off!' responded another. 'And so is mine!' chimed in a third: 'and the bag of *beads!* and the *rice!*' 'Is the *cloth* gone too?' 'No; it's all safe: I used it for a pillow.'

"'There is honour among thieves,' it is said. These Nyassa scoundrels left on the beach our aneroid barometer and a new pair of boots, thinking, perhaps, that they might be of use to us though of none to them. It was rather humiliating to be so completely done for by a few black thieves.

"A few of the best fisheries seem to be the private property of individuals. We found shelter from a storm one morning in a spacious lagoon which communicated with the lake by a narrow passage, Across this strait stakes were driven in, leaving spaces for the fish-baskets. About a score of men were busily engaged in taking out the fish. We tried to purchase some, but they refused

to sell. 'The fish were not theirs, they belonged to a man in a neighbouring village: they would send for the owner.' In a short time the gentleman made his appearance, and sold us some. He did not appear to be the chief, but one who owned, or had farmed out, this very productive fishery.

"Some of their burying-grounds are wonderfully well arranged and cared for. One of these was on the southern shore of the fine harbour in the great bay. A neat and wide path was made on its east and south sides. A grand, old, sacred fig-tree stood on the north-east corner, and its wide-spreading branches threw their kindly shade over this last resting-place of the dead. Other splendid trees grew around the hallowed spot. The graves were raised exactly as they are at home, but lay north and south, the heads being at the north. The graves of the sexes were distinguished by the implements which the buried dead had been accustomed to use in their respective occupations, while amidst the joys of life. The heavy stick used in pounding corn, one end in the grave and the other thrust through the basket in which the meal is sifted, showed that a woman slept beneath the sod; a piece of fishing-net and a broken paddle were over the grave of a fisherman, and all the graves had numerous broken pots arranged around them. At the head of some a banana-tree had been carefully planted. The people of the neighbouring village were friendly, and readily brought us food for sale.

"CHARLES LIVINGSTONE."

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4. *Paper prepared for the Royal Geographical Society, by* DR. LIVINGSTONE.

Read, November 24, 1862.

"January, 1862.

"UNDER the impression that the Fellows of the Royal Geographical Society appreciate attempts made by our countrymen for the benefit of their fellow-men, I may mention, before proceeding to detail the operations of our own mission on Lake Nyassa, that we had the pleasure of showing the Oxford and Cambridge missionaries the way from Dakanamoio Island, a few miles below Murchison's Cataracts, to the highlands of Mananja, south of Mount Zomba. We left the ship in their company on 15th July, 1861, and in two marches reached the edge of the plateau, some 3000 feet, on which geographers will agree that, with common sense, the missionaries are more likely to enjoy good health, while pursuing their benevolent enterprise, than they would be on any of the adjacent lowlands. Here we were mortified to find that advantage had been taken of the route followed by Dr. Kirk from

the Shiré to Tette, to institute an extensive system of slave-hunting in the very country to which the Bishop and his associates had come. The first party met had eighty-four captives. As it was possible that they might have been bought, they were asked how they came to be bound and led in that way towards Tette. It turned out that a marauding party of a tribe named Ajawa or Ajauwa had been invited by the Tette people to attack village after village of Mananja, kill the men, and sell the women and children to them. During the course of the inquiry the adventurers escaped into the forest, and the best thing that could be done was to present these and the captives of three other Portuguese parties to the Bishop, to try what he could make of them. Altogether they numbered about one hundred and forty souls, chiefly women and children.

"The spot selected for a temporary residence is, to the eye, about 15 miles south of the middle of Mount Zomba. It is on the banks of a stream about 10 yards wide, called Magomero, and will serve until more extended acquaintance with the country enables them to choose a better. The Mananja have so little organisation that the destruction of one village after another produced no union for mutual defence. Their paramount chief, who lives on the Shiré, did nothing but help those, who were carrying off his people, across that river. The nation seemed noways surprised at his supineness. The only effort made was to send for a chief who is believed to ensure victory by his sorceries; and the bravery of the Mananja, of which we had received such highly coloured accounts from the Portuguese, showed itself in universal flight before the Ajawa. It was plain that if these marauders were not induced to desist, the fine fertile country would soon be inhabited by the missionaries alone. With a view to stop the effusion of more blood, we set off to hold a parley with the Ajawa, and found them at the base of Mount Zomba. Unfortunately, we came upon them in the very moment of victory, for they had just burnt three villages; and a long line of captives, laden with plunder, were moving along to the temporary residence of the plunderers. Here the Bishop offered up a solemn and fervent prayer, and, with the accents of his prayer, we could hear the sad wail for the dead, and shrill screams of joy over the victory. A panic seized the captives, or carriers, as we first appeared in sight; all dashed down their loads and fled. But the Ajawa soon demanded if we came peaceably; our assurances in the affirmative were neutralized by some Mananja followers calling out 'Our Chibisa' (the great sorcerer) 'has come;' and most unfortunately, the effect of this foolish call, in depriving us of our English name, was not realized until afterwards. Elated too with continued success, they probably thought that a small party of about twenty

would prove an easy prey, and they began to shoot us with their poisoned arrows. Our slowly retiring from their village was considered only evidence of fear, and they crowded round to within fifty yards, and, but for recourse to our fire-arms in self-defence, would soon have cut us all off. So little did we anticipate this, the English name having hitherto served to ensure respect, that we had barely ammunition to serve our purpose. The Mananja followers alone suffered from the arrows and guns of the Ajawa. After this small band of sixty or eighty robbers were driven off, other bodies of Ajawa have since been employed by the people of Tette, and it seems evident that it is intended to foot out the Mission, without the authorities being in any way compromised. We have some reason to believe that the guns were handled by Portuguese slaves.

"Returning to the ship at Dakanamoio Island, we began the carriage of a boat past Murchison Cataracts on the 6th of August, and in three weeks placed her on the Upper Shiré, in lat. 15° 20′ s. The cataracts begin in 15° 55′ s., as we have 35′ or 40′ of land portage. The western bank was followed, that being smoother than the eastern. In the worst parts a few small trees cut down opened a path for our shouting assistants, who kindly considered the boat as a certificate of peaceful intentions, at least to them. Launched on the Upper Shiré we were virtually on the lake, for there is but little difference of level. It has little current, and is everywhere of good depth. Before entering the lake proper in lat. 14° 25′, we pass through the lakelet Pamabombe, 10 or 12 miles long, and 5 or 6 broad. It is nearly surrounded by a broad belt of papyrus, so densely planted that we could scarcely find an opening to the shore. The plant is 8 or 10 feet high, air is excluded where it grows, and so much sulphuretted hydrogen gas evolved, the white paint on the bottom of the boat was blackened. Myriads of mosquitoes showed, as I think they always do, the presence of malaria, and warned us off to the more healthy shores of Lake Nyassa. We sailed into it on the 2nd of September, and felt refreshed by the greater coolness of the air in contact with this large body of water.

"The depth was the first point of interest, and while skirting the western shore, about a mile out, we found, as the Upper Shiré was from 9 to 15 feet, the lake deepened from 9 to 15 fathoms; then as we rounded the grand mountainous promontory, Cape Maclear, we could feel no bottom with our lead-line of 35 fathoms or 210 feet; as we wended our way along the western shore, which is just a succession of bays, we found that where the bottom was sandy, at a mile from the land, the depth varied from 6 to 14 fathoms. In a rocky bay about lat. 11° 40′ s. we had bottom at 100 fathoms; but at a mile out of it we found none with a fishing-line

of 116 fathoms or 696 feet, but this was unsatisfactory as the line broke in coming up. According to our present knowledge a ship could find anchorage only near the shore. Reverting to the southern end, we found the tongue of the lake, from which the Shiré flows, to be about 30 miles long and 10 or 12 broad. Rounding Cape Maclear westwards, we enter another arm which stretches southwards some 18 miles, and is from 6 to 12 miles broad. These arms of the lake give the southern end a forked appearance, and with the help of a little imagination it may be likened to the boot-shape of Italy. It is narrowest about the ankle, 18 or 20 miles. From this it widens to the north, and in the upper third or fourth it is 50 or 60 miles broad. The length is over 200 or 225 miles. But we were there at a very unfavourable period of the year; the 'smokes' filled the air with an impenetrable haze, and the equinoctial gales rendered it impossible for us to cross to the eastern side. As the sun rose behind mountains, sketches and bearings of these at different latitudes enabled us to secure approximate measurements of its width. There are several crossing places, as at Tsenga and Molamba, and about the beginning of the upper third they get over by taking advantage of the island Chizumara; but further north they go round the end instead, though that takes several days. Like all narrow seas, surrounded as this is by mountains, tremendous swells get up very suddenly. On one of these occasions we were caught a mile from the shore and could neither advance nor recede. The men all became so sea-sick that they could scarcely be made to keep the boat's head to the sea. Terrific rollers, with perpendicular sides and crests broken into spray, came across the lake; but fortunately broke either before they reached or passed us. We were riding at anchor in seven fathoms. The boat behaved admirably during the six weary hours we were detained there, but one roller breaking on her would have ended our exploration. After this we trusted implicitly to the opinions of our seaman, John Neil, and often sat cowering for days together, waiting for the surf to go down. We had to beach the boat every night to save her from being swamped at anchor, and, did we not believe that the frequent storms were peculiar to that period of the year, would call Nyassa 'the Lake of Storms.' No current could be detected; the sounding line showed no deflection from the perpendicular. The boat swung at her anchor wherever the slightest breath of wind blew her; and patches of water-loving grass, which the natives anchor over fishing creels to attract the fish by the shade, invariably showed the direction of the wind alone. The natives are aware, however, that a long-continued gale raises the water a few inches on the shore to which it blows, and then of

course it must return to its level. We tried hard to find a current, for we hope to navigate the lake ourselves, and an 'unknown current' is the plank by which many lubbers who lose their ships are saved. The height of the water varies between the wet and dry seasons about 3 feet. Five rivers flow into it from the west; they are from 15 to 30 yards wide, and some require canoes in crossing, but unitedly they do not account for the evaporation and the Shiré's perennial flow. A large river may come in farther north, but great was my disappointment in not finding one that would lessen the longitude towards the country of the Makololo. Many torrents—stagnant when we passed—discharge much water in the rainy season. The water is fresh, but somewhat earthy-tasted and hard; this may not be the case when the lake is full. The water never becomes warm as in the Shiré and Zambezi. We were there during the hottest period of the year, and we could bathe in its delightful water whenever we chose, for the alligators, though tremendous fellows, are well fed on fish and seldom kill men. They, however, capture people in the Zambezi, chiefly when the water is discoloured and they cannot see their natural prey. Fish abound in Nyassa, and the vast population on its shores all engage in catching them with trawling nets. As the sun declines, groups of natives in hundreds sit and gossip under the shady trees near the water's edge, waiting till the surf goes down. Then, launching their canoes, they commence trawling, and often continue their labours most of the night. Toiling in a state of nudity, they too suffer from fever, but their skins are much more torpid in function than ours. Our beards grow as much in a week as their wool does in a month. Hence conformity to the customs of the natives, which people sometimes enjoin, would require a modification of our highly excitable skins.

"The numbers of people we saw on the lake exceeded all I have observed elsewhere. Probably the rains will draw off many to their agriculture. To the south-west we have the Maravi, then as we go north we come among the Marimba, then the Matumboka or Atimboka, Makusa, and Mañkamvira. They are essentially one people, with one language, and much the same appearance. All, like the Manganja, are marked with cicatrices in straight lines, which, crossing each other, form lozenge or triangular-shaped devices. But the Matumboka raise the skin into heart-like lumps, and file their teeth to points. There is a slight difference in the dialects spoken, but all understand each other, and the Manganja language serves everywhere. The name Marimba might be applied to them all. We never heard the name Wanyassa except among Arabs. The prefix Wa belongs to the north. The Abisa, or Awisa, or Babisa, call themselves Wabisa. There are Marimba

on the east coast, and Anguru. We heard Ajawa firing cannon on that side, near the southern end: they are probably marauders engaged in slave-hunting.

"The people are all clothed with the inner bark of a species of acacia, steeped and beaten till it is soft. The fair sex are—to use the mildest term—*very* plain. The lips, large enough if let alone, are pierced and distended with quartz-stones till they are hideous. The men are better looking than the women. We were quite as great curiosities to them as the hippopotamus was to the highly civilized who live on the banks of the Thames. They were upon the whole civil. At one village only were they impudent, but they were a little 'elevated' by beer. Twice they went the length of lifting up the edge of our sail, which we used as a tent, as boys do the curtains of travelling menageries at home; but they did not cross the line made on the sand when we were at meals. They spoke of us, indeed, as 'Chirombo' (wild beasts), but they had no idea that they were understood. No fines were levied or dues demanded.

"When about half-way up the lake, an Arab *dhow*, lately built to carry slaves across, fled from us to the eastern shore. Expert thieves, possibly from the east coast, crept up to our sleeping places about four o'clock in the morning, and made off with what clothing they could lay their hands on. No food was to be had except what we could shoot. Fortunately elephants and hippopotami were tame. At 11° 40′ we entered the borders of a tribe of Zulus, called Mazitu or Mazite, who came originally from the south, opposite Sofala or Inhambane. Here the shores of the lake were strewed with skeletons and putrid bodies of the slain. Our land party dreaded meeting the inflictors of the terrible vengeance of which the evidences everywhere met the eye, without a European in their company. So I left the boat, and a mistake separated us from it for three days. The country is mountainous, and the spurs of the mountains come sheer down to the lake. While toiling along up and down steep ravines, our most strenuous efforts could not make 5 miles a day in a straight line. The boat had gone on 20 miles, and a storm prevented its return. We met seven Mazite, who seemed as much afraid of me as the men were of them. I went to them unarmed. They wished me to sit in the sun while they sat in the shade, and rattled their shields (a proceeding that inspires terror among the natives) when I refused and came and sat down beside them. They refused to take me to the boat or to their chief, thought that my note-book was a pistol, and on parting sped away up the hills like frightened deer. The country had been well peopled, but now skeletons lay in every hut among broken pots and other utensils. No food could be found, and, but for four goats we had with us, we should have starved. On the

second day the land party gave in, but, taking two of the best, I pushed on after the boat, and on the morning of the fourth day met it coming back. The last latitude taken was lat. 11° 44′ s.; the boat had gone about 24′ north of that. The northing made on shore was less than that, but from elevations of over a thousand feet, and from the boat, at least 20 miles more were seen. So we may venture to assert that the lake extends into the southern borders of the tenth degree of south latitude. Our provisions were expended; the land was desolate, except a few pirates on detached rocks off the coast; our land party had turned; and without it an accident to the boat would have proved fatal to us all. This was the first time I had turned without accomplishing what I had set out to do; but turn we must, though in sight of the large mountain masses looming in the distance, in which the lake probably ends. We pulled back in the boat in one day what, on land, with the most heartbreaking toil, I had accomplished in three; and a good fellow, called Marengo, laded us with all the different kinds of food he had, and regretted that we could not spend a whole day with him drinking beer.

"The information collected about the Rovuma affords a good illustration of the instability of the foundation on which much speculative geography stands. One intelligent native, with apparently no motive for deceiving us, asserted most positively that our boat could sail out of the lake into the river; another, that it must be carried a few yards; while a third would maintain that the land carriage was at least 50 miles. It would at that season of the year have been foolhardiness to cross the lake to gain certainty for ourselves. In three out of four storms our little boat could not have lived. We met two Arabs, who had come down from Katanga, in the far interior, to buy calico with ivory at the lake. One had lived fourteen, the other sixteen, years in the interior. They drew Nyassa discharging towards the south, and Tanganyika towards the north, which last we know from Major Burton to be nonsense. They reported another lake, called Moelo, and say that the Loapola or Luapula flows into it. I wonder who will be set down as the discoverer of that after the English have been there.

"The fish in the lake are very abundant. This may be the reason why the alligators are so tame. They are, as already remarked, always most destructive to human life when the Zambezi is discoloured and they cannot procure their usual diet of fish. One fish, shaped like trout, ascends the rivers to spawn. It is very good to eat, having somewhat the flavour of herring. Clouds, exactly like columns of smoke, floated over the lake, and led us to conjecture that they arose from the burning of grass on the opposite shore; but passing through one of these clouds, we found that it consisted of insects no larger than our smallest gnats. They are

called Kungo, and are collected and boiled into cakes, which reminded me by their flavour of roasted locusts, but the taste is fishy. This is probably the smallest winged insect used as food by man. Locusts are here unknown.

"The only trade on the lake is in slaves. The people do not attempt to kill elephants or hippopotami with their bows and arrows, and both animals are remarkably tame. Slaves were often offered to us for sale. The cotton grown on the upper part of the lake is of a remarkably fine quality. We could only state that we should soon come in a larger vessel and purchase their cotton; and, judging from the quantity we have purchased on a small portion of the Shiré, and that not in crop time, the produce from Nyassa, with its remarkably extended coast-line, will in the course of a year or two be very considerable. The actions, however, of the Portuguese slave-hunters on our footsteps have a more depressing effect upon our spirits than all the physical obstacles we have to encounter, or than the fever itself.

"(Signed) DAVID LIVINGSTONE.

"P.S.—On returning to the Upper Shiré, we had a good view of the country east of it, and I suspect that we have been misled as to the length of the Lake Shirwa or Tamanda, for the country near the Lake Nyassa is all mountainous. A level patch, however, exists from about 14° 40′ to 14° 50′ S., and it is probable that here the hippopotami cross from the river to the lake. The native information was correct enough I believe, only they looked on the Upper Shiré as a part of Lake Nyinyesi or Nyassa, while we took the lake proper as its real beginning. We never had time to examine the Lake Shirwa, but think that 20 or 30 miles may have to be cut off its length in the maps.

"When we reached the uppermost cataract, we slung our boat to a branch of a fine shady tree, about 10 feet from the ground. The elephants which abound there may disturb it, but nothing else will. We then walked past the cataracts, having completed our trip of 600 miles, going and coming, in three months. Our next work is carrying a steamer, which we expect in pieces, by a road made by ourselves past the cataracts.

"(Signed) D. L."

It was shortly after this that the disasters of the Mission may be said to commence. We cannot do better than present the following summary of the situation from the columns of the 'Cape Argus' of May 22nd, 1862, which supplies the gap between January 8th and 27th April, when the bereavement that then overtook Dr.

Livingstone, in the loss of his wife, which might have made a less lofty spirit succumb, may be said to have put the coping-stone to the catastrophe of this heroic band. It will be remembered that tidings reached England that an unexpected famine had ravaged the Shiré, to the privations consequent upon which, and the consequent inability of the natives to furnish provisions, much of the lamentable results are to be attributed :—

"At Chupanga, about ten miles from Mozzaro, the *Pioneer*, it was found, could proceed no further. There was, therefore, no alternative but to prosecute the remainder of the journey in the two boats, which were provisioned for ten days; and as it was supposed that their destination might be reached in four, the prospect did not look very formidable. When we say that, instead of four, twelve days elapsed ere the boats made the junction of the Rua River, 60 miles from their journey's end, and that during this period the ladies were in open boats, exposed to all the extremes of a fearfully unwholesome atmosphere, to the thousand insect-plagues which literally render existence almost unbearable, and that the crews were, man after man, struck down by insidious disease, it will be readily understood how wretched was their situation, and how heavily those in charge felt their responsibility.

"At this part of the river it was that the Bishop and Mr. Burrup were expected to be in readiness to receive them. But the natives would not give any information. No one appeared, and Captain Wilson, knowing that provisions would be needed by the *Gorgon*, sent one of the two boats back down the river on a foraging expedition, while he pushed up with the other to leave the ladies at Chibisa. The crew of the former suffered terribly from fever on their way; and, indeed, from all accounts were most miraculously preserved, especially as provisions and medicine were all used up; and of stimulants there were none.

"Captain Wilson in his boat went on safely enough to Chibisa, the nearest spot to the mission station: there he left the ladies in charge of the doctor, and tried to get overland with Dr. Kirk, of the *Pioneer*, and four men; but when within two days' march of the place he was attacked by fever which had nearly proved fatal. Dr. Kirk even had looked out for a place in which to bury him. Dr. Kirk, too, was struck down, but most providentially a messenger, who had been dispatched forward, returned with some of the mission party. This may be said to have saved them from death.

"Then it was that Captain Wilson and Dr. Kirk first learned the disastrous news which has shocked and saddened so many. The natives at Rua had known of it, but had kept silence, fearing lest they should be suspected of having caused the deaths of the Bishop and Mr. Burrup by witchcraft. One night, indeed, the boat in

which were Miss Mackenzie and Mrs. Burrup had anchored within 100 yards of the Bishop's grave.

"On the 14th of February it was first known at the station by the arrival there of one of the Makololo, who reported the Bishop's death, and intimated the approach of the Rev. Mr. Burrup, who was carried on some rough branches of trees by two Makololo, but so shrunk and ill as to be scarcely recognisable. From Mr. Burrup it was gathered, that, after leaving the station on January 3, the Bishop and he had slept five nights on the road; that at Chibisi they obtained a small canoe (the only one) with some men, who paddled them down to the island (Malo). Unfortunately they were upset, got wet through, and, worst of all, lost a case in the water, containing clothes, powder, and medicine. At first they were well received by Chief Chikangi. The Bishop had an attack of low fever, which soon gained ground on a constitution, which, though naturally strong, had been weakened by exposure and suffering. It soon became evident that he was sinking fast, as his speech was wandering, and he was perfectly helpless. The same afternoon, on the other side of the river, in a secluded spot under a large tree, the Rev. Mr. Burrup was reverently reading the Burial Service in the dim twilight over his lost leader, with no one near to share his affliction save the Makololo who had dug the grave.

"On the next day, Mr. Burrup prepared to return to the station. Nothing but death was before him. Leaving a letter for Dr. Livingstone, he journeyed on to Chibisa. Thence to the station he was carried, being too weak to walk. From the 14th February, the day of his arrival, hopes of his recovery were entertained for a short time; but ere long diarrhœa added to his weakness, and the fever was aggravated by the want of proper nourishing food. On the morning of the 22nd he breathed his last; and on Sunday, the following day, he was buried near the station. Neither Miss Mackenzie, Mrs. Burrup, nor the Rev. Mr. Hawkins ever reached the station: they returned to the Cape in H.M.'s ship *Gorgon*." *

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* With regard to the prospects of the Mission, which has just received so severe a check, we quote the opinion of the naturalist attached to the Livingstone expedition:—

"Although so short a time has elapsed in which to speak of the working of the Mission, the results as they are now patent to all, should be taken for good or ill. No one can enter that wide country, at the present time, who has seen it since or before the arrival of the Mission, without seeing at once the change that has been effected. The objects of the Mission are known and appreciated; a light has been thrown on the vileness of slave-traffic, and chiefs now abhor it who, but a few months since, were solely occupied in furnishing its victims. The principle of civilizing before evangelizing is being truly carried out; and the example of the working Christians has already leavened a large multitude, and prepared the way for effective religious instruction. By their example and exertions not only friends but foes have been led to compare their conditions, and to seek to better

[We quote here, as the sole decided information furnished at this period, the following extract from a letter of the Rev. Mr. Stewart (no date), who had apparently returned from an unsuccessful

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them; and it is my confident belief that, the influence of the Mission continuing as hitherto, both Ajawa and Wa-Nganga will unite to turn their faces against slavery, and to combine their interests for mutual welfare."

We ['Cape Argus'] also take advantage of an interesting and carefully drawn up narrative in the 'Cape Monthly Magazine,' to extract a few observations bearing upon these points:—

"A mission, then, has been planted firmly in a country which, as far we can see, promises amply to repay the labour spent upon it, and under a climate which will allow Europeans to live without danger. But it is clear that there exists an urgent necessity for sending fresh supplies, both of men and stores, with the utmost possible despatch.

"We dare not leave those who are already there to depend for any length of time on their own unaided resources. Their number is too small—too small even for the ordinary work which a party of missionaries has to carry out.

"Besides, in a climate and country peculiarly trying to European constitutions, health and strength can be secured only by such provision of food and clothing as might safely be dispensed with in a healthier region. What are luxuries elsewhere are necessaries here—wine, spirits, flour, are essential. Nor is it likely that the Mission can be long left without fresh stores of this character. The first necessity, then, is to establish regular and trustworthy means of communication between the upper part of the Shiré and the Kongone mouth, in order that the supplies needed may be forwarded from time to time, and that those who may hereafter be sent up to the Mission may reach their destination safely and easily.

"Nothing but the prospect of entire failure could justify the abandonment of such an undertaking at the present. Materially, the prospects of the settlement are promising enough. There is no longer anything like a widely-spread hostility to be apprehended among the natives. The soil is fertile, and the abundance of rare and valuable wood, such as the lignum vitæ and ebony, will in time supply materials for a healthy trade; while if cotton can be grown in any considerable quantity in the lower grounds, the prosperity of the whole region might be indefinitely increased. In the Upper Shiré there is a teeming population, which will furnish labour in abundance. All that is needed is to supply such incentives to exertion as an easy communication with more highly civilised lands would be pretty sure to bring with it.

"All the members of the Zambezi Mission agree that never was there such a field for a mission, or a country where they could expect to exercise a wider or a more useful influence. The natives are naturally intelligent, certainly disposed to be friendly, and keenly alive to the attractions of trade. They need only help and patience, and they will raise themselves.

"The slave-trade can be met successfully only at its outset. Its supplies must be cut off at their source. It is to no purpose that the efforts of the Portuguese have stopped the export of slaves along their own coast, and that the sea north of the Mozambique Channel has been cleared by our cruisers. Arab dhows can still steal up the coast, and when they have got a human cargo at Zanzibar or the mouth of the Rovuma, they have little difficulty in finding a market where to dispose of it. But the station of the Magomero commands the great slave-trade track which skirts the southern boundaries of Lake Nyassa. If this can be effectually stopped, if caravans are no longer able to drive their gangs of captives along their old paths, if bands of kidnappers are no longer able to foray with impunity, there will be some reason to hope that they will either find some more lawful occupation for themselves or at all events leave others to pursue theirs in peace. And the opening of the river will do very much to facilitate this result. For instance, the unhappy natives who are now employed to carry down ivory from the interior are sold into slavery at the end of their journey in order to avoid the expense of the return home. But if a time should ever come when regular communication, by canoes or other means, connects South Central Africa with

attempt to cross the Lake, and written before intelligence had been received of the sad fate of the more advanced members of the Mission. A later letter, dated 15th March, mentions his having only then received the intelligence already mentioned.]

"What of Rovuma? Whatever you please. From the positive point-blank assertion that we could sail out of the lake into the river to the equally positive statement that the boat must be lifte a few yards, or 50 miles over a bank. The lake rises and falls from wet to dry season about 3 feet; has no current; five rivers flow into it on the west side, of from 15 to 30 yards in width. There must be a large river at the end. For miles there are more rivers on the east than west side; for we have not wherewith to account for the flow of Shiré. A strong wind continuing, sometimes raises the water a few inches; colour, green or deep sea-blue. Plenty of fish and hippopotami; alligators few and civil. We could bathe where we liked—a great blessing, quite unknown on the Shiré and Zambesi. Water fresh, but a little earthy-tasted and hard: it is probably different when full. The population on its shores is prodigious: I never saw so many people anywhere else in Africa. They are clothed with the inner bark of a tree; they fish with large nets, creels, torches, hooks, and poison. A fish, shaped like the salmon, goes up the streams to spawn. It has the little knob for digging, like that fish; tastes like a herring, and is very good. Clouds floated over the sea, just like smoke. We sometimes, from them, conjectured the distance of the opposite shore; but we got into one, and found it to be composed of insects exactly like our smallest gnats: they are collected, and boiled into cakes, which smell exactly like locusts, and taste fishy. Elephants and hippopotami shockingly tame. We killed one, and the herd was standing a mile off two days afterwards; but the Arabs will mend this: met two that had come down from Katanga to buy calico with ivory at Nyassa. Katanga seems to be S.S.W. of Cazembe. They offered malachite for sale; and told us that Ben Habib had taken back the Makololo, roused, we suppose, by our consul at Zanzibar."

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5. *Extract of Letter from* Rev. Mr. Stewart.

"Zambesi River, 6th March, 1862.

"We had a longer stay at Natal than we anticipated; and after that, we had unexpectedly to make acquaintance with Mozambique

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the trading cities of its coast, it will hardly be found the cheapest plan to expend a fresh detachment of labourers on each separate journey. They may be employed in their own land more profitably as well as more humanely; they will find their account in felling wood or planting cotton, or in any other branch of honest industry, which will flourish when all the ivory is exhausted and the elephants from which it came are extinct."

as well. This was rather out of our course; but circumstances rendered it unavoidable. For myself, I was not sorry to be obliged to see the Portuguese capital of Eastern Africa. It hardly came up to my expectations, though these were not pitched very high. The city is built on an island, at the northern end of which stands the fort, San Sebastian. The inner harbour lies between the islands and the mainland. You go ashore at a very good wharf or pier, the upper part of which is of wood; and this timber frame-work again rests on some ten or twelve stone supports, which seem strongly built. Facing the wharf, and at a short distance from it, is probably the best house in the place, the palace of the governor-general. Like all the others, it is flat-roofed, and, like most of those having any pretensions, the walls are whitewashed with pink colour, if such a contradiction in terms may be allowed.

"Before landing, you have heard of Domingo's store as the chief place of business, and thither you make your way, with the double object of supplying your wants, and having a central point from which you may proceed to examine the curious city of Mozambique. Hotels, or inns of any sort, are unknown. After wandering through narrow and crooked streets, formed of dull and lifeless-looking dwellings, you ask for the main street. 'This is it,' is probably the answer you get; and, 'Domingo's store?' 'You are just in front of it,' though you know it not. Having received this information, and reflected for a moment upon it, your conceptions of what Mozambique City ought to be, or may be, suddenly assume the sober hue of reality; for that, indeed, is now before you. A walk through other parts of the city only leads to further acquaintance with what you have already seen. There are the same dull-looking flat-roofed houses built of stone, with thick walls and washed pink, white, and brown. What one misses at first entrance into the place is the presence of white men. Their numbers are quite disproportionate to those of the black population in the streets. Of course, if there are few white men, there are still fewer white women. Perhaps it would not be correct to say there are none; but certainly there are almost none to be seen.

"The absence of anything like the business activity and life of even a small English colonial town is very striking. Nor is the comparative want of any amount of business in the city itself made up for by activity in the harbour. There were few ships. In the inner harbour there were but one or two, and a Portuguese war-steamer; in the outer, H.M.S. *Gorgon* and our own brig. This was so far explained by the existence of the American war, as it is said American ships came frequently into the port.

"Near the sea, and for the distance of about 20 or 30 miles from the mouth, the banks are thickly covered with trees, chiefly mangroves; dwarf palms, screw pines, and a species of mallow,

with, in certain places, many stout climbers binding all together, and forming with their twining branches an impenetrable leafy mass. There is something very similar to be seen on the coast-line of Natal, only with a somewhat different vegetation.

"Farther up the trees disappear; the flat level nature of the banks becomes more apparent; and tall grass 6 to 12 feet high, occasional palmyra and cocoa-nut palm, standing solitary and sentinel-like by the river's brink. The tops of the huts of small native villages at some short distance back from the river, with scattered trees here and there, make up the picture.

"At Shupanga, where we are now, the country improves very much. The left, or southern bank, is densely wooded; the land rises considerably. But for certain tropical features of a very unmistakeable kind, such as cocoa-nuts, palms, and baobabs, one might, in an imaginative mood, suppose you were looking on a bit of rich English scenery. The existence of a good stone house with its red tiles, no doubt adds to the influence of the delusion.

"The natives are few in number, and are, I should suppose, mostly slaves, especially on the northern bank. Of course their moral and religious condition is no better than their social one. The condition of the heathen world is certainly one of the most touching and baffling of all the problems this life presents us with."

About this period it appears that several applications were made for assistance against the Ajawa, which, however, were resolutely declined. A constant succession of claims, nevertheless, ultimately decided Mr. Procter, who on Bishop Mackenzie's death had been left in charge of the mission, to visit Urbona, the chief of the Mingazi, in order to get his sanction to reside in his district, the country being hilly, particularly fine, and pleasant. Mr. Procter and Mr. Dickenson undertook this journey, and started off early on the morning of March 20; and on reaching their destination obtained permission to have a tour of exploration through the district governed by Urbano, in order to select a site which would not only be healthy, but also be appropriate for the carrying out of their mission. Accordingly, they proceeded towards a fine long spur of the western extremity of the Chiradzu Mountain, as the place looked promising. After crossing a valley which lay between them and the ridge which they wanted to reach, and ascending the ridge a considerable distance, Mr. Procter found the country favourable to their purpose. The want, however, of a stream, compelled them to abandon the thought of residing there. After making further explorations, the party returned to their mission station, where they continued until April 15, a period of nearly a month, educating the natives, &c., without being molested. On that day,

however, news reached them of a series of incursions of the Ajawa, which rendered it imperative to change their station. This was accordingly done, about 70 men being engaged to assist in carrying their luggage. It was decided that they should proceed to Chibisa's village, on the Shiré, for the present. The journey, which occupied ten days, was accomplished safely, almost all the people—in number about 60—freed through the exertions of the mission party, accompanied them. Mr. Procter's communication concludes: "We are situated on a bank about 100 feet high, and for nearly a month have not felt any ill effects worse than those which came upon us in our former place. We hope we shall be able to remain here for a few months, and go on with our previous work, acquiring the language and teaching our own people."

The following is an extract from a letter from Mr. Waller, which comes next in order of date:—

"Chibisa's, 29th May, 1862.

"MY DEAR LORD BISHOP . . . . That we must again move on to some higher hills than this cliff is certain. It is Dr. Livingstone's positive advice, and it is already showing itself wise; we shall, I imagine, go on to the hill, somewhere on the left bank of the Shiré, near the falls: we shall then be more come-at-able. There has been a sad drought on the hills just round here. The Mapira (or Guinea corn) crop has been burnt up in consequence, and provisions are very scarce. Of course a rush has been made to the low-lying ground by the river, and I passed by miles of the most luxurious growing crops on the banks, which should be available in another month. My journey was a comparatively quick one, four days under the month. I saw the last section of the *Nyassa* being made ready to complete her, and the two ships may come up here at any moment; but I have great fears the river is too low to allow of it for some time to come. Poor Doctor! his brave heart has been tried to the utmost; never have I pitied man more than when his crowning sorrow* came to him whilst I was with them at Shipango. I know where all his hope lies, and the main-spring of his life and every action. How I do wish we English had the trade *entrée* to this river; the cotton that could be raised, I am the more convinced, would make the Shiré a main artery for driving a new influence into that black land of horrors that is around us everywhere. The stores we have must last to the end of the year.

"HORACE WALLER.

"P.S. I have not spoken of the little steamer: all are very anxious for it, and my experience of the journey, and the mode of transit

* Mrs. Livingstone, Dr. Livingstone's devoted companion, who had not long rejoined him, expired on the 27th April, 1862.

by canoes, makes me long for it the more. I did not mention that she ought to be fitted with strong hauling apparatus, blocks and tackles, and very strong capstans."

Just two days after the date of the last-quoted letter, we find a letter from Dr. Livingstone, the chief extracts from which we quote, appending thereto the Doctor's more detailed letters of 21st and 25th June, 1862, dated from Shupanga, whither in the interim he had returned from the Kongone:—

"Kongone, 2nd June, 1862.

"THE missionaries have fled down to the lowlands at Chibisa's: a great mistake. Waller, from whom we have heard the unwelcome intelligence, says he will vote for going back to the hills. Their *prestige* is now, of course, nowhere. This very detention down in the lowlands has been a terrible trial for all. We never had so much fever: we cure it quickly, but back it comes to the same individual again and again. We are all ready for launching the *Lady Nyassa*. Mr. Rae put her together in a fortnight with very few hands; but I had to move him away, ill of dysentery, to breathe the sea air. He is much better, but thin.

"D. L."

* * * *

"Shupanga, 21st June, 1862.

"I HAVE been trying to get the geographical position as correctly as possible of the spot where the remains of my much-loved one repose, by observing re-appearances of the satellites of Jupiter, and taking time by stars; but I fear with less success than I desire.

"We never had so much fever and dysentery as we have suffered by our detention in the lowlands. Dr. Kirk and Mr. C. Livingstone were sent up to Tetté to bring away our baggage thence. I had their sole medical charge on board, while the Rev. Mr. Stewart attended those left here; and I had, on the average, a fresh case of fever every day during a month.

"I was slow to believe that the neglected state of the engines prevented our getting up the Shiré in February; but we spent three weeks in getting up to Shupanga, though we have performed the same distance since with heavier loads in three days, or rather in two and a half days' steaming.

"Thornton is here. He has been to Kilima-Njaro, and thinks the information given by the missionaries. Krapf and Rebman, quite reliable. He saw the snow and felt the cold at about 8000 feet altitude and fifteen miles distance. The mountain is an old volcano about 21,000 feet high; but he will himself give his experiences."

"Shupanga, 25th June, 1862.

"THAT" (alluding to the mail just dispatched) "will give you the rather untoward news that the missionaries had fled to Chibisa, from the Ajawas. I am sorry for it; but, except that it lands them too near the Shiré swamps, it is, perhaps, the best thing they could do under the circumstances."

The preceding letter is interesting, as showing the position of the party when the winter season, such as it is, of an intertropical climate was setting in.

About December it was apparent that yet other victims had to suffer from the malaria of these regions. The Rev. H. C. Scudamore expired on the morning of 1st January, 1863. The following letter from the Rev. L. J. Procter gives an account of the state of affairs prior to Mr. Scudamore's death:—

"Signor Vianna's, on the Zambesi, 27th Dec. 1862.

"THE wretched state of the country on the hills and along the Shiré has compelled us again to have recourse to the Portuguese for a further supply of the food merely absolutely necessary, and I have come down with one of our native people to purchase rice for ourselves and mapira for our dependents. On reaching this place, the residence of Signor Vianna, on the 16th, I fell in with Dr. Livingstone, who had just returned from the Rovuma, which he had been exploring in boats, and where he tells me he had been partially successful in his search for a river-route to Lake Nyassa; but that he and his party had been in considerable danger from a number of river-pirates who had attacked them with guns: they had come upon rapids in the river, but the country around was favourable for land-carriage. All were well on the *Pioneer*, and they were going on to Shupanga, whence they would start up the Shiré for Chibisa's, as soon as the rise in the water should be sufficient. As regards ourselves, he told me that there was a great quantity of stores for us at Quillimane, which had been brought from the Cape by H.M.S. *Rapid*, in November, and which he had assisted in landing with considerable trouble and difficulty—another kindness for which we are indebted to the good Doctor.

"As I came down the Shiré I found the people in considerable affright on account of Mariana in the higher parts of the surrounding country, where an immense number of fugitives had also gathered together: the lower parts were ravaged and almost deserted, burnt villages being the signs of what had been going on, and a number of guns fired only three or four miles distant from an island on which we one night slept, the tokens of what is still going on. Mariana has about 2000 men, armed with guns for the most part,

in his service, and is leagued now with the Portuguese at Quillimane for slaving purposes.

"We have had the greatest difficulty in getting even a very small quantity of seed-corn from the natives. A short time before my departure we sent Charles Thomas, one of the Cape men, up the hills south of our last station to try if he could buy any; but he had very small success. He went towards the Milanje, and got very near the very place where I and Scudamore were attacked: the people there pleaded famine, not it appears from real want, against which there was abundant external evidence, but because they were evidently unwilling to encourage any traffic or even communication with the English. Charles gave a miserable account of the country in the neighbourhood of our late district, and the route to it from the Shiré: it is at least decimated on account of the famine; he passed through many villages where all the inhabitants, he was told, had died of hunger. Mbami's village itself, with which I presume you are by this time familiar as the first stopping-place on our route to Magomero, is destitute of people; all have perished except the chief himself and a few of his family. He paid us a visit a short time ago and was then looking himself in a half-starved condition, very different from the stout and hearty personage who greeted us there on our first journey up. With regard to Satchi, and the country between it and Magomero, I think I have informed you in my previous letter.

"I took a journey with some of our own people down the Shiré a short time before I left Mikarango, to try if anything was to be bought in the way of seed or corn, but I could get nothing: there were large crops coming on, but at present the complaint is famine. The people on the right bank, our side of the river, were also in great fear of another Portuguese rebel, of whom I made mention in one of my last letters as staying with Chibisa."

The following postscript (dated 27th February) to a letter dated 10th February, 1863, from the Rev. J. L. Procter, already mentioned, narrates the state of matters up to date:—

Having alluded to the departure of Mr. Rowley, one of the Mission to Tetté for food (the expected supplies not having arrived), Mr. Procter says,—"This is our last resource; animal food is failing us, and even before Rowley can return we shall be reduced to simply vegetable diet. Of course, therefore, much depends upon this difficult and trying journey to Tetté, which will occupy at least a month. If food can be had, all will be well: if not, our case is desperate, and but one resource will be left for us. I have accordingly written thus to Mr. Woodcock, our hon. secretary:—'Under the circumstances I feel it my duty to state that, if animal

food cannot be insured, and if help in men and some additional provisions do not arrive from home, we shall be compelled to quit our present abode for the sea-coast, whence we shall try to make our way to either Johanna, Natal, or the Cape; and, not to leave any indefiniteness in this sad statement, I will add that, if we receive no addition to our numbers, or see no better hopes for the future before the 15th June next, we shall then proceed to make our way down the river in the best way we can. Grievous as this resolve is, I fear we cannot do otherwise. The whole country is in a state of utter ruin and destitution, and the drought still continues. Our surgeon, Mr. Dickinson, assures us that we have only this alternative unless we choose to stay and die for want of proper sustenance.' " *

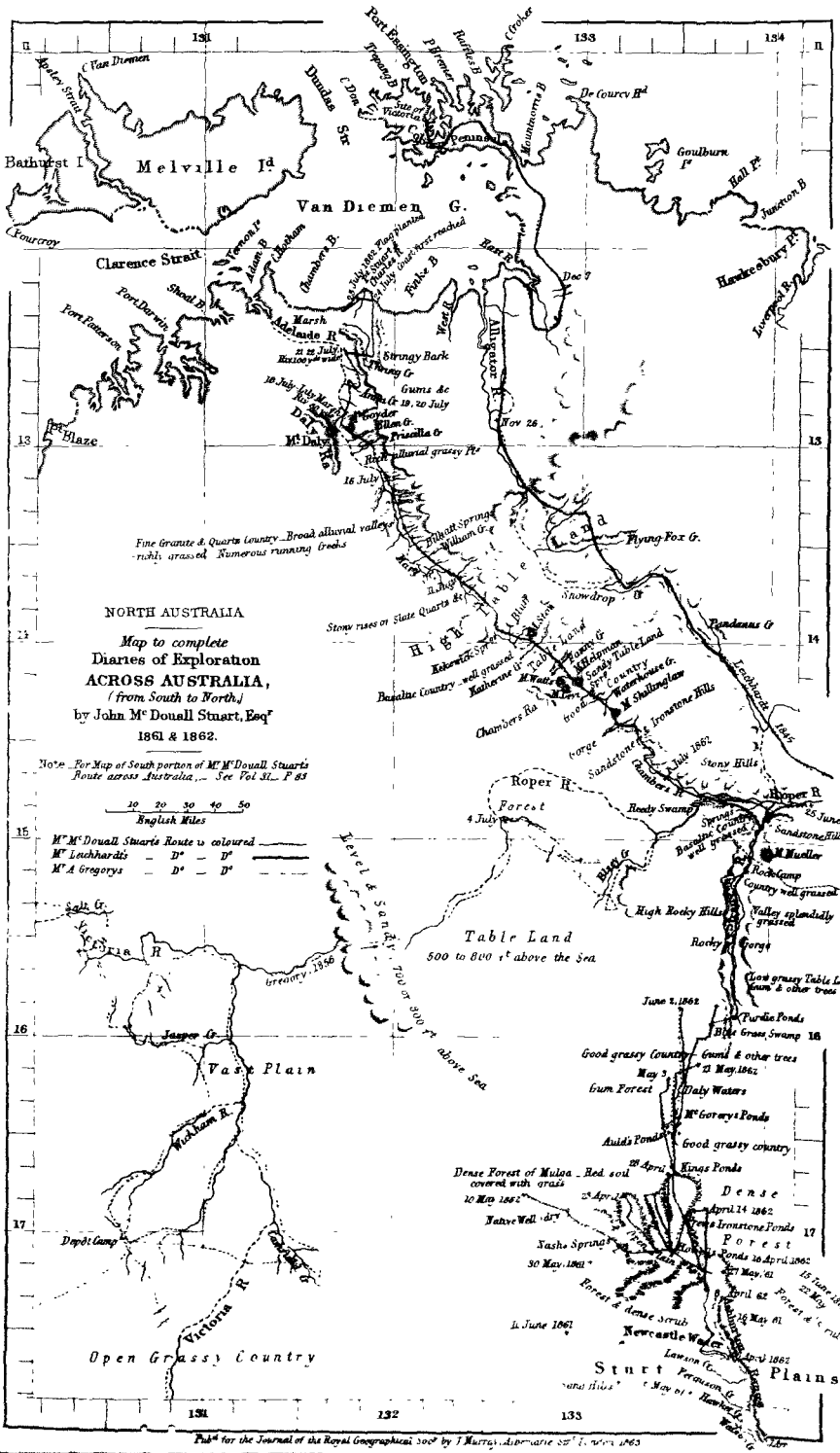
XIII.—*Diary of* Mr. John M'Douall Stuart's (Gold Medallist R.G.S.) *Explorations from Adelaide across the Continent of Australia*, 1861-2.

Read, March 9, 1863.

[The party — consisting of Mr. M'Douall Stuart, leader; Mr. J. W. Waterhouse, naturalist to the expedition; Mr. William Kekwick, second in command; Mr. F. W. Thring, third officer; Mr. W. P. Auld, assistant; Mr. Stephen King, Mr. John Billiatt, Mr. James Frew, Mr. Heath Nash, Mr. John M'Gorery, shoeing smith—left Adelaide 5th December, 1861; and, after suffering

* A letter of Mr. Procter's, dated February 24, says:—

" I do not think anybody in England can possibly realise the present condition of the land, never one of abundance, but now utterly impoverished, and scarcely recognisable as the one through which we passed now nearly two years ago. With the exception of two or three, who have asked leave to build huts near us, all the inhabitants of the neighbouring villages have either died, or left these parts for others where there is more likelihood of raising crops: here all is war and famine; and a drought, which has mainly contributed to produce the latter, if not indeed the former (for the Makololo, the Ajawa, and the Portuguese rebels down the river, all make food the chief object in their depredations), seems likely to be continued through the ensuing year. Although this is the rainy season, one bright sunny day succeeds another with scarcely a cloud visible, and already I fear the second crops (those of mapira or Guinea grain) will prove a failure. Corpses are still constantly seen floating down the river, and prove too sadly what the state of the country continues to be above us. Of course amidst all this desolation it is impossible to get native food of any kind; even amongst the Ajawa themselves, the famine has done a great work of devastation, so that we scarcely know where to look or where to go for aid. Of farinaceous food we have an ample store, not only in the supplies sent out to us, but in the rice and mapira which I forwarded from Vianna; this, however, even in the tropics, is not sufficient to support European constitutions—and though we can do with much less animal food than if we were in England, still we must have some, or our strength will soon fall away to nothing. I am told that, with the exception of cattle, nothing of any kind is to be bought at Tette, and that it, as well as Senna, are totally dependent upon Quillimane for all corn-food; the natives have died of hunger there in almost as large numbers as they have done here."



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severely from the tremendous summer heat of the interior, which knocked up several of the horses, reached the station of Mr. Levi on Friday, 17th January, 1862. This being at that time the most outlying station, is taken as the point of departure, there being nothing calling for special notice in the journey thither, which lies over ground more or less known to all who are interested in the geography of South Australia.]

January 21, 1862.—Started from Mr. Levi's station. Lat. 28° 35′ S; long. 136° 10′. One of the horses, named "Norman," was found drowned at the upper end of the large water-hole. This is a great misfortune, situated as I am with so many weak horses: he was a good horse, and carried a heavy load. I intend to start to-day, and, in order to lighten some weak horses, I leave here one week's rations, and have also ordered that the great-coats of the party should be left. Camped on the creek south of Hawker's Springs, there being plenty of good feed and water.

Jan. 22.—South of Hawker's Springs. Proceeded and camped on a creek north of Milne's Springs. Two of the horses are looking very bad. Wind S.W.

Jan. 23.—North of Milne's Springs. Proceeded to the Freeling Springs, and camped. Two of the weak horses have given in, and I am compelled to leave them here; which obliges me also to leave part of my provisions, as the other horses have as much as they are able to carry. Wind S.W. Lat. 28° 2′ 22″.

Jan. 24.—Freelings' Springs. Proceeded to the creek west of Rose Range, and camped. Two other horses knocked up. Weather hot. Wind S.E.

Jan. 25.—Creek west of Rose Range. I am compelled to spell here a day to give the knocked-up horses a rest, and try to make them carry provisions. To leave two horses here would cause me also to leave some rations, which I wish to avoid doing at this early stage of the journey.

Jan. 26.—Creek west of Rose Range. Lat. 27° 47′ 6″.

Jan. 27.—Proceeded to the gap in the Hanson Range; the water-holes all full. Wind S.E.; lat. 27° 39′ 43″.

Jan. 28.—Proceeded towards the west branch of the Neales, the day being extremely hot, and some of the horses looking very ill; and finding water at 13 miles N.W., I camped to give them a chance of getting some distance further. Wind S.E.: lat. 27° 30′ 13″.

Jan. 29.—Proceeded to the second west branch of the Neales; the creek has been running strong. Wind S.E.; lat. 27° 25′ 17″.

Jan. 30.—Proceeded towards the water in the sand-hills, with the intention of camping there; but, not finding any water, proceeded to the Frew or Upper Neales. Two of the horses knocked

up; distance this day, 25 miles. There is not a drop of water in the creek, nor does any rain seem to have fallen within the last twelve months, as our tracks made at that time are still quite distinct. To-morrow I shall have to retreat to some rain-water, 14 miles back, to save, if possible, the weak horses. Wind S.E.

Jan. 31.—At sunrise started back to the rain-water, but before reaching it three of the horses knocked up, and I was obliged to leave them behind, although they were scarcely carrying anything, having left their loads at the Frew; another horse was barely able to reach water.

February 1.—At rain-water holes. One of the knocked-up horses came in to water, but is perfectly useless for any further work—I leave it here. I am now eight horses short. The next journey is a long one, without water—upwards of 45 miles, and I fear I shall lose more. Lat. 27° 18′ 23″.

Feb. 2.—Rain-water holes. Another of the knocked-up horses came in to water, looking very miserable; I must leave him here also. Wind S.E.

Feb. 3.—Proceeded again towards the Hamilton, after leaving two hundredweight of sugar and what things I could spare. I arrived again at 1 P.M. at the Frew or Upper Neales, picked up the things (except the flour) that were left on my retreat, gave the horses an hour's rest, then proceeded until sundown, and camped 18 miles south of the Hamilton on a small plain without water; this day has been excessively hot, and the horses too thirsty to eat. The scrub being very thick around the plain, I am obliged to form a stockyard with tether-ropes to keep them from wandering back at night. Night very hot; wind S.E.

Feb. 4.—Started at sunrise, and a little after noon arrived at the Hamilton. Found plenty of water in the large water-hole, but much reduced to what it was this time last year; no rain appears to have fallen for some time, which makes me doubtful of the water on a-head. I shall give the weak horses the benefit of this water for two days, and then push them through to the Stevenson. A few clouds coming up from the west; wind S.E.

Feb. 5.—Camp on the Hamilton. Towards sundown heavy clouds from the W. and N.W.; wind variable; lat. 26° 47′ 31″.

Feb. 6.—Camp on the Hamilton. During the night the sky became overcast with heavy clouds; in the morning there were a few drops of rain, but towards noon it cleared up.

Feb. 7.—During the night a few heavy showers of rain; about 8 o'clock A.M. it cleared up. Proceeded to the Gum Water-hole, Bagot's Range; found rain-water and camped; a severe thunderstorm during the night.

Feb. 8.—The weather again cleared up. Proceeded to the Stevenson, found plenty of water, and camped. Lat. 26° 19′ 20″.

Feb. 9.—The Stevenson. Heavy thunder-clouds towards the north and north-west towards sundown.

Feb. 10.—Proceeded to the Lindsay or large stony water-hole and camped, the hole is quite full; there seems to have been heavy rain here lately, which I hope has extended towards the north. Wind S.

Feb. 11.—Proceeded to the Coglin and camped, but found the water in the main channel nearly all gone; during the time the party were unpacking the horses I went north towards the range and found plenty of water in a creek coming from it; on my return I sent Thring, Frew, and King, with the horses to water, and to remain with them to-night and bring them up early in the morning, the distance about $1\frac{1}{2}$ mile. Wind S.W.; lat. 25° 57′ 11″.

Feb. 12.—Proceeded across the point of the north range; found water in the Gum Creek and camped on the north side. The journey being very stony and the day very hot, caused me to camp earlier than I intended. Wind S.E.; lat. 21° 51′ 40″.

Feb. 13.—Proceeded through the light sandy soil covered with mulga and a few trees of a peculiar *eucalyptus*, to the Goyder; found no surface-water, but by digging in the sand found sufficient for the horses, and camped. The horses strayed and caused me to make a late start, and prevented me from reaching the Finke, as I had anticipated. Wind S.E.; lat. 25° 38′ 56″.

Feb. 14.—Camp on the Goyder. Some of the horses having strayed a long way off, it is too late to make a start to-day. Native-smokes about. Wind E., very hot.

Feb. 15.—Proceeded to Marchant's Springs in the Finke. This part of the country seems to have been favoured with copious showers lately, and the grass is very abundant and quite green. Native tracks and smokes numerous on and about the creek. Lat. 25° 28′ 20″.

*Feb.*16.—Camp at Marchant's Springs. Early this morning the horses started off at full gallop, and went a long way down the creek before they were overtaken. During the time that Thring was searching for them, he came on five natives armed with boomerangs, concealed behind some bushes, who, on his approaching, ran off at full speed across the sand-hills. They must have been the cause of the horses going off this morning. About 11 o'clock A.M. all the horses were mustered and found right.

Feb. 17.—Marchant's Springs. As Auld was approaching the water-hole, a native was there, who, upon seeing him, called to some others whom he saw up some trees; shortly afterwards, at a little distance down the creek, several native-smokes were seen, and one very large one to windward, blowing towards the camp, which made it evident that it was their intention to attack us under the

cover of the smoke; but Thring, while looking for the horses, came suddenly on three of them concealed behind a bush, armed with spears and boomerangs; he did not perceive them until within 12 yards of them. They immediately jumped up, and one of them threw a boomerang at him, which fortunately missed both him and his horse. He was obliged to use his revolver in self-defence. Saddled the horses, and proceeded to Polly's Springs in the Finke without any further annoyance from the natives. In the course of the day we met with numerous native-tracks up and down the bed of the Finke. Lat. 25° 11′ 44″.

Feb. 18.—Proceeded up the Finke, and camped at Bennett's Springs in the Finke. Wind S.E.; weather still excessively hot. Lat. 25° 7′.

Feb. 19.—Proceeded over the table-hills to the western part of the Finke, and camped. Found, by digging in the sand, still plenty of water in the Finke. The weather continues extremely hot. The plains between the table-hills green, with luxuriant grass.

Feb. 20 and *Feb.* 21.—Camp on the Finke. Proceeded to-day to the west camp on the Finke, and camped; found very little water, and was obliged to dig for more, which made it after dark before all the horses were watered; water brackish. Weather very hot; several native-smokes seen around.

Feb. 22.—Proceeded towards James's Range, bearing 336°. In about 20 miles one of the horses gave in, and in another 2 miles could go no further. Camped in the scrub without water, trusting that with one night's rest the knocked-up horse might be able to reach the Hugh. The mulga-scrub being thick, and the horses suffering from thirst, I was compelled to have a stockyard made of tether-ropes, to keep them from straying during the night. Weather extremely hot; wind E.

Feb. 23.—Started at sunrise; at about 3 miles the knocked-up horse again gave in, and I was obliged to leave it, and arrived, at about 11 o'clock A.M., at the Hugh, and surprised some natives who were camped at the mouth of a small creek; as soon as they saw us coming they ran off, leaving their seed-dishes, spears, &c. We found a small native-well at the mouth of the creek, in which there was some water; unsaddled, and dug a large hole, and succeeded in watering all the horses twice, which occupied us until 8 o'clock P.M. Before reaching the place, five other horses gave in, and were unable to proceed further than here. I cannot understand the cause of the horses knocking up so much, every one of them has fallen off the last week—whether it is the excessive heat, or the brackish water of the Finke, I am unable to say; it may be probably attributable to both—I now find that they are quite unable to do the long journeys that are necessary, such as I have

on former occasions accomplished. Last night I tried some citric acid in the water of the Finke, and it caused it to effervesce, showing that the water contained soda. Weather still hot; wind E.

Feb. 24.—The Hugh, south of James's Range. After the horses were watered this morning I found that three of them are unable to proceed; I must therefore remain here to-day, and try to recruit them. I would have left them here, but it would have been too much for my other horses to have carried their packs. I shall endeavour to get them across the MacDonnell Range to the Hamilton Spring, and there leave them if they do not improve. All the last-purchased horses are failing. Wind S.E., cloudy; lat. 24° 21′ 41″.

Feb. 25.—The Hugh, south of James's Range. Proceeded up the creek, and found water at the south entrance of the gorge of the Hugh, but on arriving at the water-hole, to our great disappointment, found no water. Proceeded on through the gorge; when about half-way the natives set fire to the grass and dry wood across the creek, which caused a dense smoke to blow in our faces. I had the party prepared for an attack. After passing through the smoke and fire, three natives made their appearance, about 25 yards off on the hill-side, armed with spears and shields, and bidding us defiance by placing the spears in the womeras, and yelling out at the highest pitch of their voices. I ordered Auld to dismount and fire a shot a little distance on one side of them, to let them know what distance our weapons carried. The ball struck the rock pointed out to him to aim at, and stopped their yelling, but seemed to have no other effect. I again ordered him to fire at the rock on which the middle one of the three was standing; the shot was a good one, and the ball struck the desired spot, which immediately had the effect of sending them all off at full speed. I then proceeded to the conglomerate rock, 1½ mile through the gorge, where we found plenty of water, and camped. The weak horses are very much knocked up. We have neither seen nor heard any more of the hostile natives. Wind S.E.; lat. 24° 13′ 41″.

Feb. 26.—Proceeded through the gorge of the Waterhouse Range to Owen's Springs, and camped. From the number of native-tracks seen about the creek, they must be very numerous in this locality. They have burnt the grass in and on both sides of the creek, and in many places it is still burning. In the afternoon we heard them calling out, but they did not show themselves. I am afraid they are going to be a very great annoyance to us this time. Weather cloudy, and every appearance of rain. Wind S.E.; lat. 23° 54′ 7″.

Feb. 27.—Owen's Springs. This morning the clouds all cleared away without any rain. Proceeded up the Hugh to the north-east

side of Brinkley's Bluff. I find that a number of the horses are suffering from worms, which may be the cause of their weakness. Wind S.E.; lat 23° 40″.

Feb. 28.—Brinkley's Bluff, the Hugh. I shall remain here to-day to give a horse that cut an artery a chance of getting across the range. Cloudy; wind S.E.

March 1.—Proceeded across the range, and reached the Hamilton Springs. Cloudy; wind variable; lat. 23° 37′ 13″.

March 2.—Sent Thring and King towards Mount Hay, to search for water, and to see if there is still any under the mount. At 4 miles this side of the mount they found some water in a clay-pan, and the feed around it good. I shall move on to that water to-morrow. Cloudy; wind variable.

March 3.—Proceeded on to the rain-water, and camped. Cloudy all day, but towards sundown the clouds cleared up; wind S.E.

March 4.—I shall remain here to-day to rest the weak horses before going through the 60-mile scrub to Anna's Reservoir. Slight showers; wind S.E.

March 5.—Rain-water east of Mount Hay. Proceeded toward Mount Harris. On crossing the plains under Mount Hay we came suddenly on three natives, armed with long spears and shields; they did not observe us until we were within 200 yards of them, when they ran off to a belt of scrub near the foot of Mount Hay. We proceeded on a short distance, and found some rain-water in a creek. While watering the horses the three natives again appeared, accompanied by four others, and made signs of hostility, by yelling and shaking their spears at us, and performing other threatening antics, at the same time approaching in a wide half-circle. I had the party prepared to receive an attack, but when they saw us stationary, they approached no nearer. I ordered some of the party to fire close to them, to show them we could injure them at a long distance if they continued to annoy us. They did not seem at all frightened at the report of the rifles, nor the whizzing of the balls near to them, but still remained in a threatening attitude. With the aid of the telescope we could perceive a number of others concealed in the belt of scrub. They all seemed fine muscular men—a tall one in particular, with a very long spear (upwards of 12 feet) and a large shield, which he seemed very anxious to use if he could have got within distance. We crossed the creek, and had proceeded a short distance across the plain when they again came running towards us, apparently determined to attack. They were received with a discharge of rifles, which caused them to retire, and keep at a respectful distance. Having already wasted too much time with them I proceeded over the plain, keeping a sharp look-out. Should they threaten us again I

shall allow them to come close, and make an example of them. It is evident their designs are hostile. Before entering the scrub we could see no signs of them following. About sundown arrived at Mount Harris without further annoyance. No water for the horses; short-hobbled and watched them during the night. Cloudy; wind S.E.

March 6.—Mount Harris. Proceeded to Anne's Reservoir, and camped. Sky overcast. Wind S.E.

March 7.—During the night a few showers of rain, and during the day promising more. I remain in camp to-day to rest the horses, after the very long journey through the scrub. Wind S.E.

March 8.—Proceeded across the Reynolds Range to the Woodforde, where I found plenty of water. There has lately been some heavy rain about this quarter, which has caused the creek to run. Cloudy; wind S.E.

March 9.—Two or three showers during the night. The day still cloudy; wind S.E.

March 10.—Proceeded through the mulga-scrub towards the centre. At sundown arrived at the Hanson, but found no water. Then I pushed on towards the small creek on the south side of Central Mount Stuart; the scrub being very thick, and the night very cloudy and dark. At 5 minutes past 8 o'clock I camped till daylight, being afraid of losing some of the horses. Weather cloudy; wind N.E.

March 11.—Thick scrub south of Central Mount Stuart. At daybreak had the horses saddled, and proceeded to the creek, in which I found plenty of water, and camped, to give the horses the benefit of good water and plenty of feed. Cloudy until evening; wind variable. Lat. 22° 1′ 25″.

March 12.—Proceeded across a point of John's Range, and in a small gum-creek, on the north-east side of which I found plenty of rain-water; and, being uncertain of finding surface-water in the Hanson, I remain here, to enable me to make the Stirling to-morrow without fatiguing the horses too much. Cloudy; wind variable. Lat. 21° 51′ 42″.

March 13.—Proceeded towards the Stirling, and crossed the Hanson, but found no surface-water. On arriving at the lagoon under the sand-hills I found sufficient water, and camped, there being an abundant supply of splendid grass for the horses. Wind S.E.; lat. 21° 42′ 48″.

March 14.—Proceeded to the Stirling, and found plenty of water, and camped to give the horses every chance of performing a long journey, probably without water, to the Bonney. Wind variable; lat. 21° 41′ 18″.

March 15.—Proceeded across Foster's Range to the Taylor, where I found no surface-water. A number of natives followed us

for a short distance, but soon retired, and left us unmolested. Proceeded to Thring's Spring, but, to my disappointment, found it dry. Returning a short distance to a very green spot found water, but, after watering all the horses, I find there will be not sufficient to allow of my remaining here till Monday. I shall, therefore, be compelled to start to-morrow on the long journey. Wind variable; lat. 21° 31′ 33″.

March 16.—Proceeded to Mount Morphett, and crossed it. In the creek on the north side I found sufficient water to give the horses a small drink. I then proceeded to Woodforde's Creek, in the expectation of finding water; but, to my disappointment, found it quite dry, the grass being beautifully green, and very abundant. I camped a little before sundown, to give the horses the benefit of good feed. If I proceed farther I shall have to tie them up in the scrub. Weather very cloudy, with a few drops of rain; wind variable.

March 17.—Proceeded through the bad country towards the Bonney. Though anxious to keep my old tracks through the scrub, as it does not wear the saddle-bags so much as breaking through a new line, I missed them about 2 miles after starting, in consequence of the earliness and cloudiness of the morning. I sent Thring in search of them, who, on finding them at a short distance off fired his revolver, to let us know that the tracks were found. The young horse he was riding stood the first report very well. I, not hearing the report, was moving on, which caused him again to fire, when his horse bucked, and threw him with violence on his chest to the ground. He feels his chest is much hurt from the fall. The horse then returned on the tracks at full gallop. I sent Thring and Frew after the horse, and proceeded through the scrub. Two hours before sundown, at Gum Flat, described in my former journal (vol. xxxi. p. 122), I found it was so boggy that I was unable to cross it. I therefore tried to round it to the north, but, finding it become broader and softer I retraced my steps, and proceeded to the south, hoping to find sufficient water to camp for the night. After travelling 3 miles I came upon a beautiful pond of water, and about a mile along the pond the ground was sufficiently firm to allow of the horses going to drink. This is a beautiful sheet of water, 50 yards wide, and seems to be permanent; some of the horses had a swim in it. This I have named Thring's Pond. Thring and Frew recovered the horse, and rejoined the party shortly before sundown. The mosquitoes are in myriads, and very troublesome. Cloudy; wind variable.

March 18.—Proceeded in a south-easterly course to round the pond. At 3 miles found a crossing where the water was rapidly running from one pond into another. I then proceeded towards Sutherland's Creek, on arriving at which I was surprised to find so

little water, and the grass quite dry and burnt up. The rains here have been very partial, and there is only sufficient water to last me here to-night. Wind S.E.; lat. 20° 36' 9".

March 19.—Proceeded across the Younghusband Range, on arriving at the north-eastern part of which I found abundance of water and plenty of green feed, and on reaching the Bonney it was running. Camped. Cloudy; wind S.E.

March 20.—I remained here to-day. Lat. 20° 24' 30".

March 21.—Proceeded to the Murchison Range, and camped on Gilbert's Creek, where I found plenty of water, heavy rains having fallen there lately. Wind variable.

March 22.—Proceeded across the north-west spur of the Murchison Range, and descended to the gum-creek which I had discovered on my first journey, where I found plenty of water, and camped. Cloudy, but still no rain; wind variable. Lat. 20° 40".

March 23.—Gum Creek. Mosquitoes in myriads. Cloudy; wind variable.

March 24.—Proceeded through the scrub, passing Mount Samuel, to Goodiar's Creek, and camped at the rocky water-hole, where there was nothing but spinifex for the horses to eat. Cloudy; wind variable.

March 25.—North-east of MacDonnell Range. Proceeded to Tennant's Creek, and camped. Wind variable; lat. 19° 34' 12".

March 26.—Proceeded to Bishop's Creek, and camped. A few clouds. Wind S.E.; lat. 19° 23' 9".

March 27.—Proceeded across Short's Range, and camped on Hayward's Creek. Cloudy in the afternoon; wind S.E. Lat. 19° 10' 1".

March 28.—Proceeded to Attack Creek, and camped. We have seen no natives since we left Taylor's Creek. They seem to have left this part of the country, as there are no recent tracks of them about. Cloudy; wind S.E.

March 29.—Proceeded across Whitington's Range, and camped on one of the sources of the Morphett. The country near the banks of the creek is well grassed, but the plains and range are covered with spinifex, mixed with a little grass. Cloudy in afternoon and night; wind S.E. Lat. 18° 51' 17".

March 30.—Morphett's Creek. Cloudy, but no rain; wind S.E.

March 31.—Proceeded to Tomkinson's Creek, and camped. There seems to have been a heavy fall of rain here about a month ago, as the water is abundant. Cloudy at night; wind S.E.

April 1.—Proceeded to the Burke, and camped. Wind S.E.; lat. 18° 21' 27".

April 2.—Proceeded to the Hunter, where I found plenty of water. I followed up the northern bank, and camped on one of the branch creeks. A few clouds; wind S.E. Lat. 18° 11' 41".

April 3.—Proceeded, by the foot of the range, towards Hawker's Creek. On crossing the Gleeson, I found plenty of water. Here Mr. Kekwick met with an accident. In ascending the bank, his horse fell back with him, and broke the stock of his gun, but he escaped himself unhurt. On reaching the Hawker, I was surprised to find it perfectly dry; I therefore proceeded to the Fergusson, and, by digging in the creek, found a sufficient supply of water for the night. There does not seem to have fallen a drop of water between this and the Gleeson since my last visit; the rains have been so partial that strips of country are unvisited by them. Wind S.E.

April 4.—Proceeded through the range to the Lawson, where I again found plenty, and camped in the lower part of it. Much rain seems to have fallen here. Native-smokes seen all around. Wind S.E.

April 5.—Proceeded across Sturt's Plains towards the southern part of Newcastle Water, on approaching which I found the plains too boggy to proceed. I turned in a north-easterly direction towards the Ashburton Range, and followed along the foot of it until I reached my former camp at the east end. I found all the ponds full of water, and running one into another. Wind S.E.: lat. 17° 36′ 29″.

April 6.—East end of Newcastle Water. At about 9 o'clock A.M. Mr. Kekwick, in endeavouring to shoot some ducks, went towards some native-smokes, and was met by two natives, who ran away. In an hour afterwards five natives came within 100 yards of the camp, and seemed anxious to come up to it, but were not permitted. Two hours afterwards we were again visited by fifteen more, to some of whom a present was made of some looking-glasses and handkerchiefs; at the same time they were given to understand that they must not approach nearer the camp, and signs were made to them to return to their own camp, which they shortly did. In the afternoon we were again visited by nineteen of them, who approached within 100 yards of the camp, when they all sat down and had a good stare at us, remaining a long time without showing any inclination to go. At length some of them started the horses, which were feeding near the water; which made them gallop towards the camp, frightening the natives so that they all ran away, and we were not again troubled with them for the rest of the evening. A few clouds; wind S.E.

April 7.—East end of Newcastle Water. This morning as all the horses were packed and starting, a number of the natives came running, and made a rush to the camp—I suppose to pick up whatever might be left. They then followed us for about an hour, yelling and shouting; but I imagine they did not fancy the stones and spinifex of the range over which we were travelling, for in a

short time afterwards we heard no more of them. Proceeded to the upper ponds of the Newcastle Water, and camped at my former camp, where I found more water than formerly. I shall require to rest my horses here for some days, as they are very tired and leg-weary after having accomplished the journey from Chambers's Creek to this place in three months all but one day. Clouds all gone; wind S.E.

[*April* 7 *to* 21.*—At Newcastle Water (north end). Lat. 17° 16′ 20″ S.]

April 21.—North end of Newcastle Water. Some of the horses

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* *April* 14 *to* 20, excursions in search of water.

April 14.—Leaving Mr. Kekwick in charge of the party, started with Thring and Frew at 7·15 A.M. on a northerly course in search of water; and at 6 miles, on the edge of the open plains, found some rain-water, sufficient for a few days. Proceeded across the plain on the same course; but at 3 miles saw something like a watercourse, and changed my course to 20°, to see what it was. At 2 miles I struck a dry course running south-west; followed it up towards the small rise without finding any water. Three miles further on the same course I ascended a low stony rise, from which I could see nothing but a thick forest of tall mulga and gums. I changed to a northerly course, and, at 4·20 P.M., camped in a forest without water. Wind S.E.

April 15.—Sturt's Plains, Forest. Proceeded on a course of 250°, and at 5 miles again struck the open plains, and changed to 180°. At 1 mile I found a fine water-hole 3 feet deep and about 40 feet in diameter, the edge of which was surrounded with conglomerate ironstone rock; watered the horses, and proceeded on a southerly course, through grassy plains with stunted gum-trees, to the first water I found yesterday, and camped. The plains and forests are of the same description as I have already given, only that the plains have not quite so many holes in them, and the forest in many places is covered with ironstone gravel. I shall try a course to the N. of W. to-morrow, to see if I can find water. Wind variable.

April 16.—Frew's Water-hole, Sturt's Plains. Started at 7·45 A.M., on a course of 302°; keeping along the edge of the open plain, I have made many twistings and turnings; but my general course is N.W. for 10 miles. Seeing a small rise on the open plain, a little to the N. of W., I changed to 275°; and, at 2 miles, came on some fine ponds of water, about 1½ mile long, 20 feet broad, and 3½ feet deep. I examined them on both sides, to see if they would do for a permanent camp for the party; and I think I may depend on the water lasting two months without any more rain, as it is a point nearer. I shall camp here to-night, and try another day to-morrow to the westward, and endeavour to make the Victoria; for I can see but little chance of making the Adelaide. By my journal of the 14th, everything is quite dry and parched up; no rain seems to have fallen here for a long time. The last two days have been excessively hot; the further to the west the hotter I find it. The natives seem to be numerous, for their smokes in the scrub are to be seen in every direction.

April 17.—Howell's Ponds. Started at 7 A.M., on a bearing 10° N. of W. At 12 miles crossed the open plains, and entered a thick forest of gums, and other trees and shrubs. Seeing that there is no chance of finding water to-day, returned to the ponds. The open plains seem to tend more to the north-west, which I shall examine when I bring the party up to the ponds, distance 15 miles. Wind S.E.

April 18.—Started for the camp on the Newcastle Water. On my arrival, I found the party all right, but very anxious about me, as I had been absent longer than I expected. No natives had been near them during my absence at this time; smokes were seen all around. Weather hot during the day, but cold at night and in the morning. Wind S.E.

having strayed some distance, made it 10 o'clock A.M. before I could get a start. Proceeded through 6 miles of forest and scrub to the water that I found on the 14th instant; from thence I changed to 301° 30′ for 9 miles, and then to 275°, and at 2 miles camped at the ponds I had discovered on the 16th. Native-smokes all around us. The day has been very hot, and the flies a perfect nuisance. Wind S.E.

April 22.—Howell's Ponds (*v.* preceding footnote). Preparing for a start to-morrow to the north-west in search of water. Wind S.E.

[N.B.—This was made into a depôt while excursions were made in search of water (*v.* footnotes, *a*, *b*, *c*, *d*, *e*)].

April 23 *to May* 15.—Depôt at Howell's Ponds.*

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* (*a*) *April* 23.—Howell's Ponds. Leaving Mr. Kekwick in charge of the party, I started with Thring and Frew at 8·5 A.M. on a course of 284°. At five minutes to 10 o'clock (7 miles) changed to 320°. 11·20 (4½ miles) crossed the open plain. Changed to 40° to avoid the scrub. At 1½ mile changed to W. At 1 mile changed to N.W. (12¼ miles). At 2·20 (5 miles); changed to 45°. At 3 o'clock (2 miles), changed to N. At 35 minutes to 4 o'clock (1½ mile) changed to N.W. At ½ to 4 o'clock (4 miles) camped without water. I have skirted the border of the forest-land in the hope of finding water, but am disappointed. I have not seen a drop since I started. The plains are covered with beautiful grass, 2 or 3 feet high. There are a number of different kinds of birds about, and native-smoke all round. I have searched every place where I thought there was the least chance of finding water, but without success. The day has been exceedingly hot. With such hot weather as this I dare not attempt to make the Victoria. The horses could not stand 140 miles without water. Those I have had with me to-day seem to have suffered enough, and would not stand another two days without. I must therefore return to the camp to-morrow. Wind calm.

April 24.—Sturt's Plains. Returned to the camp, and found all right. The day has been excessively hot; we have seen nothing new during the journey—the same open plains, with forest between.

(*b*) *April* 25.—Howell's Ponds. Leaving Mr. Kekwick in charge of the party, started at 8·20 A.M. with Thring and Frew and fresh horses on a northerly course, in hopes of better success in that direction; course 360° for 22 miles; grassy plains, covered in many places with stunted gums, and a new tree with a small green leaf. After that, we entered again a thick forest, and scrub almost impassable, at 28 miles. Seeing no prospect of getting through it, I returned 2 miles to a small open space where I could tether the horses. I have not seen a drop of water this day's journey. The forest is so very thick, and so many twistings and turnings required to pass through it, that, although I travelled 30 miles, I don't believe I made more than 15 miles in a straight line. The day again exceedingly hot, with a few clouds; a few birds were seen during this day's journey, but no pigeons, which is the only sign we have now of being near water. Wind variable.

April 26.—Dense forest. Returned to the camp: the horses felt the heat and the want of water very much. In the forest the heat was almost suffocating; I hope it will rain soon, to cool the ground and replenish the ponds, which are drying up fast. There have been a few clouds during the day, but after sundown they all cleared away. Wind S.E.

April 27.—Howell's Ponds. A few clouds have again made their appearance, but still no rain; there has not fallen a drop of rain since I left the Woodforde, which was on the 9th of March. Wind S.E. Lat. 17° 5′ 16″.

(*c*) *April* 28.—Howell's Ponds. Leaving Mr. Kekwick in charge of the party, started with Thring and King on a course of 338°, to try and find an opening in

May 13.—Depôt, Howell's Ponds. Resting ourselves and horses. Day again hot, with a few clouds round the horizon. The

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the dense forest and scrub as well as water. At 10 miles we crossed the open plain, with stunted gum-trees and long grass. At this point we met with a small ironstone rise, about 20 feet in height. On ascending I was again disappointed in finding before me a dense forest and scrub. Proceeding in our course it became thicker than any which I had ever encountered before, and was almost impassable; still continued, and for a short distance, in some places, it became more open. A little before sundown, I camped on the edge of a stunted gum-tree plain. There are a few slate-coloured cockatoos and other birds, which leads me to hope that, in the morning, I may come across some water. Wind variable, with a few clouds during the day.

April 29.—Sturt's Plains. Started on an easterly course, following the flight of the birds; but, at 5 miles, crossed the open gum-plain, and again encountered the thick forest. Examined every place I could see or think of, where water was likely to be found; but was again disappointed—not a drop was to be seen. Changed my course, so as to keep on the plain; at 4 miles again crossed, and again met the dense forest, but still no water. Changed to S.E., and at 10 miles found ourselves on a large stunted gum-plain. Changed to a little E. of S., and arrived at the camp without seeing a drop of water. Wind variable, with heavy clouds from the east.

April 30.—Howell's Ponds. I feel so unwell to-day that I am unable to go out; besides I shall require my compass-case and other things mended, which got torn to pieces in the last journey by the forest and the scrub; yesterday's clouds are all gone, and have left us no rain; another hot day, wind E.

(*d*) *May* 1.—Howell's Ponds. Leaving Mr. Kekwick in charge of the party, started with King and Thring to the water-hole that I discovered on the 15th ult., arrived in the afternoon and camped; this water-hole I have named "Frew's Water-hole," in token of my approbation of his care of and attention to the horses. This water-hole is about 20 feet below the plain, surrounded by a conglomerate ironstone rock; since my last visit it is only reduced 2 inches, and is still a large body of clear water from the drainage of the adjacent country; it will last much longer than I anticipated. I shall use my best endeavours to-morrow to find an opening in the thick scrub from W. to N.W.; the course of the forest seems to run a little W. of N., and I am afraid the open plains are surrounded by it; however, I shall try to get through it if I possibly can. Wind S.E., day excessively hot.

May 2.—Frew's Water-hole. Started at 7½ o'clock, A.M. Course 335°. At 10 miles, a dense forest and scrub. Changed to 10° E. of N. At ½ mile struck a watershed, and followed it north for 2 miles. Found a little rain-water in it, and at 2 miles further arrived at its source. At 3 miles further on the same course changed to 30° E. of N. At 3½ miles again changed to 320°, and at about 1½ mile struck some fine ponds of water. At 2 miles further, arrived at what seems to be the last water, a small shallow pond. Examined around the plain to try and find others, but without success. A little before sundown, returned to the last water and camped. The first part of the day's journey was over a stunted gum-plain, covered with grass. At 10 miles we again met with thick forest and scrub. I then changed my course to get out of it, and struck the small watershed running to the E. of S. Following it generally for 2 miles on a northerly course, we met with a little rain-water. Continued the same course through a thick forest and scrub for 3½ miles, to get through it if possible. At this point it becomes denser than ever. Sent Thring to climb to the top of a tree, from which he saw apparently a change in one of the low scrubby rises, which appeared to be not so thickly covered with scrub as the others. I directed my course to it, 30° E. of N., to examine it. I also observed that there is some sandstone in the low scrubby rises, which leads me to hope that I may not be far from a change of country. On this last course we travelled 3 miles, through a dense thicket of hedge-tree, when I observed some large gum-trees bearing 320°, and wishing to examine them before leaving the rise, as I approached nearer to it

natives had again set fire to the country all around, which increases the heat. I wish it would come on to rain, and put out their fires,

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I again sent Thring to climb a tree to see if there was any change in its appearance. He could see nothing but the same description of forest and scrub. The change that he saw from the other tree was the shade of the sun on the lower mulga-bushes, which caused him to suppose that it was more open country. Not seeing any opening in that direction, I changed to the gum-trees. At 1½ mile was delighted at the sight of a chain of fine water-holes, their course N.W. to S.E., the flow apparently to south-east. I followed one pond, which was about ½ mile long and seemingly deep. A number of smaller ones succeeded. They then ceased, and I crossed a small plain, which is at times covered with water. Observing some green and white-barked gum-trees on the west side of it, I went to them, and found a small watercourse with small pools of water, which flowed into the plain coming from the N.W. Following it a little further, we met with some more water. A short distance above this, it ceased in the dense forest which seems to surround these ponds. I shall endeavour to force my way through it to-morrow to the W. of N. Wind S.E., with a few clouds from the same direction. Those ponds I name "King's Ponds," in token of my approbation of his attention to the horses, and his readiness and care in executing all my orders. Wind S.E., with a few clouds in the same direction.

May 3.—King's Chain of Ponds. Started at 7·20 A.M. on a course of 350° : at 24 miles changed to 45°; at 3½ miles changed to N.; at 2½ miles camped. At 2 miles from our last night's camp found an easy passage through the forest, the rest of the 24 miles was over a well-grassed country, well wooded with gum and some new trees that I had found last year, and occasionally a little scrub—in some places thick for a short distance. On my first course, before changing, I was crossing low ironstone undulations, which caused me to think I was running along the side of one of the scrubby rises. I therefore changed to 45° E. of N. to make the plain—if there is any—the scrub being so thick that I cannot see more than 50 yards before me; at 3½ miles I found that I was travelling over the same description of small rises, and getting into much thicker scrub. I again changed to N., to see if that would lead me into a plain; at 2½ miles it is still the same, and apparently a thick forest and scrub before us. I camped a little before sundown at a little open place to tether the horses. I have not seen a drop of water during the whole journey, nor any place likely to retain it, with the exception of a small flat about 6 miles from the last camp. The day very hot. Wind S.E., with a few clouds.

May 4.—Dense forest. Returned to King's Ponds. This country seems but little frequented by the natives, as we have seen no recent tracks of them. There are a number of cockatoos and other birds about; we have seen no other game except one wallaby and one kangaroo; there are plenty of old emu-tracks about the ponds. Wind variable—cloudy.

May 5.—Returned to Frew's Water-hole and camped. Before sundown the sky became overcast with clouds. Wind variable.

May 6.—Frew's Waterhole. Towards morning we had a few drops of rain; returned to the camp and found all well. Yesterday they were visited by a few natives who seemed to be very friendly; they called water "ninloo;" they were armed with spears, about 10 feet long, having a flat sharp flint point about 6 inches long, with a bamboo attached to the other end. They pointed to the west as the place where they got the bamboo and water also, but they seemed to know nothing of the country north of this; they were tall, well made, elderly men. After talking for some time they went away very quietly. To-day they have set fire to the grass round about us, and the, wind being strong from the S.E., it travelled with great rapidity. In coming into the camp, about 3 miles back, I and the two that were with me narrowly escaped being surrounded by it: it was much as our horses could do to get past it, as it came rolling and roaring along in one immense sheet of flame and smoke, destroying everything before it.

May 7.—Howell's Ponds. Resting; the natives have not again visited us, but their smokes are seen all around. I shall start to-morrow on a course W. of

and fill the ponds, which are shrinking a great deal more than I expected. Wind S.E.; clouds.

N., to try and make the Victoria by that route. I shall take some of the water-bags with me, to see how they answer. Wind S.E. Clouds all gone.

(*e*) *May* 8.—Howell's Ponds. Leaving Mr. Kekwick in charge of the party, started with Thring and M'Gorrerey, also with King and Nash, who were to bring back the horses which carry the water-bags, whilst I with Thring and M'Gorrerey proceed on a west course. Started at 8½ A.M., keeping the former tracks made on my previous journey to the westward, to where we met with the thick forest. About a mile beyond struck a native-track, followed it, running nearly N.W. until nearly 3 o'clock P.M., when we came upon a small water-hole or opening in the middle of a small plain, which seems to have been dug by the natives, and is now full of rain-water. This is apparently the water that the natives pointed to, for their tracks are coming into it from every direction. This opening I have named Nash's Spring, in token of my approbation. I am very much disappointed with the water-bags; in coming this distance of 21 miles they have leaked out nearly half. Wind S.E.

May 9.—Nash's Spring on Plain. Sent King and Nash with the horses that carried the water-bags back to the depôt, while I and the other two, at 20 minutes to 8 o'clock A.M., proceeded on a bearing of 290°, following one of the native-tracks running in that direction; *at about a mile they became invisible; for that distance I observed that a line of trees was marked down each side of the track by cutting a small piece of bark from off the gum-trees with a tomahawk. This I had never seen natives do before; the marks are very old. At 18½ miles struck another track (the trees cut in the same way) crossing our course;* followed it, bearing 10° E. of N., and at about 2 miles cames on a native well with moisture in it; followed the valley on the same course, but found no more appearance of water. I again changed to my original course, and, at a quarter to 4 o'clock, finding that I was again entering the dense forest and scrub, I camped at a good place for feed for the horses, but no water. The whole of the day's journey has been through a wooded country, in some places very thick, but in most open; it is composed of gums, hedge-trees, and some new trees—the gums predominating; there were also a few patches of lancewood-scrub. For the first 18 miles the soil was light and sandy, with spinifex and a little grass mixed. At the end of 18 miles I again got into the grass country, with occasionally a little spinifex. Wind S.E. Cold during the night and morning.

May 10.—The Forest. Started at 5 minutes to 7 o'clock A.M. (same course, 290°). Almost immediately encountered a dense forest of tall mulga, with an immense quantity of dead wood lying on the ground. It was with the greatest difficulty that the horses could be got to advance through it. At 1 mile it became a little more open, which continued for 6 miles; at 7 miles I thought, from the appearance of the country, that it was dipping towards the N. and N.W.; I therefore changed my course to N.W., and in less than a mile again entered a dense forest of tall mulga, thicker than I had yet been into; continued pushing, tearing, and winding into it for 3 miles—the further I went the denser it became. I saw that it was hopeless to continue any further: we were travelling full speed, yet had made little more than a mile an hour throughout the 10 miles gone over to-day. The country is a red light soil, and covered with abundance of grass, but completely dried up; no rain seems to have fallen here for a length of time; we have not seen a bird, nor heard the chirp of any to disturb the gloomy silence of the dark and dismal forest—thus plainly indicating the absence of water in and about this country; I therefore retraced my steps towards Nash's Springs; passed our last night's camp, and continued on till sundown, one of the horses being completely knocked up. Camped without water. Wind S.E.

May 11.—We had to leave the pack-saddle, bags, and all other things we could not carry with us on our riding-horses. Proceeded to Nash's Spring, which we reached after 2 o'clock P.M., with another of the horses completely knocked up; it was with difficulty that he reached it. I suppose the days being so extremely hot, and the feed so dry that there is little nourishment in it is the cause of this,

May 14.—Depôt, Howell's Ponds. As I don't feel well enough to-day, I shall remain here, and start to-morrow morning. This morning, while Thring was collecting the horses, he came on a place where the natives had been encamped a day or two before, and there saw the remains of the bones of one of them that had apparently been burnt; this is quite a new feature in their customs. Wind S.E.

May 15.—Depôt, Howell's Ponds. Started with the party across the plain to Frew's Ironstone Water-hole, course 15° E. of N., found the plain burnt for ten miles—the fire has been so great that it has burned every blade of grass, and scorched all the trees to their very tops. I was very fortunate the other day in having escaped it. Nothing could have lived in such a fire, and had we been caught in it we must have perished. Wind S.E.; clouds all gone; lat. 16° 54′ 7″.

May 16.—Frew's Ironstone Water-hole. Started at fourteen minutes past 8 o'clock A.M., course 345°, for King's Chain of

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as they were horses that had been out with me on my last year's journey, and had suffered from want of water a longer time than on this occasion. I am nearly in a fix—my long journey, with the horses unable to do more than two nights without water, and the water-bags retaining only half the quantity in one day's journey; to make the Victoria through the country I have just passed into would be impossible. I must now endeavour to find a country to the northward and make the Roper. I am very vexed about the water-bags turning out so badly, as I was placing great dependence on them for carrying me through. I must try and pass through the best way possible. Wind S.E.

May 12.—Nash's Spring, West Forest. Proceeded very slowly with the knocked-up horse to the depôt; he appears to be very ill, and is looking very bad this morning. Arrived there and found all right; they had been visited by the natives twice during my absence. They appeared to be very friendly, and were hugging Frew and King, for whom they seemed to have taken a great fancy; there were old, young, and children. Some pieces of white tape were given to them, which pleased them much. They still pointed to the west, as the place where the large water is, and made signs with a scoop to show that they have to dig for it in going through, which I am now almost sure is the case from what I saw of the country in my last journey in that direction. In upwards of 50 miles we did not see the least signs of a watercourse, nor could I discover any dip in the country; it has the same appearance all round; one cannot see more than half a-mile before one, and in many places only a few yards. I have been deceived once or twice by what appeared to be a dip in the country, but it turned out to be only lower trees and scrub than what we were travelling through. With a small party I might make the Victoria from here, but there is every chance of losing the horses in doing so; and I should be in a sad predicament to be there without horses, with the impossibility of receiving supplies from the party at the depôt, and should have to perish there. Therefore, to attempt it I consider would be folly and madness, and might be the cause of sacrificing the lives of both parties. Had the feed been green, or had it any substance in it, I would have tried; but every blade of grass is parched and dried up as in the middle of summer, and the horses have not the strength nor endurance to undergo much privation, of which I have had a proof in the journey I have just taken. After resting a day or two to recover the horses, and get ourselves a little refreshed, I shall move the party up to King's Ponds, and try to push through wherever I can find an opening. Day very hot; wind S.E. A few clouds came up from that quarter after sundown.

Ponds; arrived at about 3½ o'clock P.M. In coming through, one of the horses separated from the rest and bolted off into the dense forest, tearing everything down before him; we got him in again, but with a broken saddle, and the top off one of the bags, which we again recovered, and arrived at the ponds without any further accident. Wind N.E.; very hot, and a few clouds; lat. 16° 38′ 53″.

May 17.—King's Chain of Ponds. Sent King and Thring to follow round the flat, to see where the ponds go to. About noon they returned, and reported that the water loses itself in a flat which is surrounded by thick forest and scrub. This certainly is a very pretty place, and a great pity it is not more extensive. It reminds me much of the Park Land found by Captain Sturt, in 1845, where he had his second depôt, named Fort Grey. Wind S.E., with a few clouds.

May 17 *to* 25 (both inclusive).*—Depôt at King's Chain of Ponds.

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* *May* 20.—Leaving Mr. Kekwick in charge of the party, I started with Thring, King, and Auld, at 9½ A.M., on a northern course; at 1 o'clock P.M. changed to 65°, to what appeared to be a bare hill; at a little more than a mile struck a small watercourse running towards the north; followed it, and at about 2½ miles came on some ponds of water, but not so large as those at our depôt—at present they are not more than 3½ feet deep; examined around the wooded plain, to see if there was any larger body of water, but could see none. This plain is covered with small gums, having a dark bluish-green leaf with a grey-coloured bark; there are also a few white ones around the ponds of water, which abound with grass. Before reaching the plain we crossed what seemed to be elevated sandy table-land, extending about 9 miles, covered with spinifex and dark-coloured gum-trees; we also passed two or three narrow belts of tall mulga and hedge-trees which grow on the stony rises, about 20 feet high, which they seem to surround. These ponds I name "Auld's Ponds," Wind S.E. Lat. 16° 28′ 16″.

May 21.—Auld's Chain of Ponds. Started at 20 minutes past 8 o'clock A.M., course north; the morning has been so thick, with a heavy fog, that I do not get a start till late. At 3 miles I found another chain of ponds, but not so large; these I name "M'Gorrerey's Ponds." Proceeded on the same course and passed through some thick belts of hedge-tree and scrub; the country then opened into a splendid grassed one, with gums and other trees; we have also seen, for the first time, a new gum-tree, having a large broad dark-green leaf, and the bark of a nankeen colour, which gives a very pretty effect to the country. At 17 miles, not finding any water, and having passed five deep holes, surrounded with ironstone conglomerate rock, similar to Frew's Water-hole, but without any water in them, and to all appearance the dip of the country being to the N.E., I have changed my course to that direction; again travelling over a splendidly-grassed country for 10 miles, occasionally meeting with low stony rises of ironstone and gravel, at the foot of which were some more deep holes without water. The last 7 miles was rather holey, and seemingly subject to inundation. In the last 3 miles we had to get through a few patches of scrub; the grass is all very dry; no rain seems to have fallen here for a long time. At sundown camped without water, day very hot. Wind variable, with a few clouds. Lat. 16° 8′ 39″.

May 22.—Fine grass country. Returned to M'Gorrerey's Ponds; day very hot. As I am not satisfied that these ponds cease here, I shall try again to-morrow a little more to the east. Wind S.E.

May 23.—Gave the horses a little time to feed after daylight, in consequence of their having been tethered during the night; the country is so thickly wooded

May 25.—Proceeded to the Depôt, King's Chain of Ponds, where I arrived in the afternoon, and found all well. No natives have been near them, although some of their smoke has been seen at a short distance from the Depôt. Yesterday they hoisted the Union Jack, in honour of Her Most Gracious Majesty's birthday. Wind S.E.

May 26.—King's Chain of Ponds. Removed the party on to Auld's Chain of Ponds.

May 27.—Auld's Chain of Ponds. Proceeded with the party to the fourth chain of ponds and creek. This water has every appearance of being permanent, and I hope I may fall in with such another in the next degree of latitude. Wind S.W. Latitude 16° 14′ 31″.

May 28.—Daly Waters, fourth chain of ponds and creeks.*

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that I dare not trust them in hobbles the whole night, as, if they were lost sight of, there would be great difficulty in finding them here; there is still the appearance of a small creek, which I shall follow until it runs out or tends too much to the east. Started at 8½ o'clock A.M., course 20° E. of N., following the small creek about 2 miles; it seems to be getting larger with occasionally a little water in it; we have also passed and seen on both sides, ponds with water, surrounded by gum-trees; these ponds, when full, must retain water for a long time. We have also seen a new tree growing on the banks of the creek with a large straight barrel, dark smooth bark, with bunches of bright yellow flowers and palmated leaves. At 1½ mile further the creek is improving wonderfully. We have now passed some fine holes of water, which will last at least three months; at 5 miles the water is becoming more plentiful and the creek broader and deeper, but twisting and turning about very much, sometimes running E. and then turning W., and all other points of the compass. Having seen what I consider to be permanent water, I shall now run a straight course, 20° E. of N., and strike it occasionally to see if the water continues: I have named these "Daly Waters," in honour of His Excellency the Governor-in-Chief. Within 100 yards the banks are thickly wooded with tall mulga and lancewood scrub, but to the east is open gum-forest, splendidly grassed. Proceeded, and occasionally touched the creek, and always found fine reaches of water which continued a considerable way; at 13 miles they seemingly become smaller and wider apart; at 15 miles it seems to be tending more to the eastward, its bed is now conglomerate iron-stone, and as this appears to be about the last water, I shall follow it as far as it goes; in a short distance it has become quite dry, with a deep broad course, upwards of 20 yards wide; at 17 miles it separated into two channels, and at ¼ mile the two channels emptied themselves into a large boggy swamp, with no surface-water. I examined the swamp, but could see no outlet; the country round about is thickly timbered with gum and other trees; returned to the last water and camped. I shall return to the depôt and bring the party up here. Wind S.E.; a few clouds at sunset.

May 24.—Chain of Ponds Large Creek. Followed my tracks back to Auld's Chain of Ponds, and had difficulty in doing so, the ground being so hard that the hoofs of the horses scarcely left any impression on it. This would be a fearful country for any one to be lost in, as there is nothing to guide them, and one cannot see more than 300 yards around, the gum-trees are so thick, and the small belts of lancewood make it very deceptive. Should any one be so unfortunate as to be lost, it would be quite impossible to find them again; it would be imprudent to search for them, for by so doing they would run the risk of being lost also. Arrived at Auld's Ponds and camped. Wind S.E. A few clouds.

* (*a*) To-day sent Thring and King round to the swamp into which this creek flows, to see if there is any outlet to the eastward of this within 2 miles. There are other ponds and a creek, which also empties itself into a swamp a little to the eastward of the one into which this one empties itself. In the

May 28 *to June* 10.—At Daly Waters Depôt.

May 31.—Daly Waters. There are a number of small fish in this water, from 3 to 5 inches long, something resembling a perch; the party are catching them with hooks; they are a great relish to us, living so long upon dry meat. Wind variable.

June 1.—Mr. Waterhouse shot two new parrots.*

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afternoon they returned, having found a small watercourse forming on the north-west side of the swamp: followed it, running nearly 10° E. of N. In about 1½ mile they came upon a large swamp covered with water, but shallow. They then proceeded 7 miles on a N.E. course; then meeting with some white-barked gum-trees, appearing to run to the N.W., followed them for 3 miles, crossing a gum and grass plain. Observing some native-smoke to the N.E. they returned. Wind S.E.

(*b*) *May* 29.—Daly Waters. Leaving Mr. Kekwick in charge of the camp, at 7½ o'clock proceeded with Thring, Auld, and Frew, down the creek to examine the swamp found yesterday. It is about 30° E. of N., about 3 miles from the depôt at Daly Waters. The water does not appear to be deep, but covers a large area; there were a few pelicans and other waterbirds on it. From this we proceeded on a course 20° E. of N., to search the flat where Thring and King saw the smoke yesterday. At 18 miles from Daly Waters, having crossed the gum-plain without meeting with any water, and being on apparently higher ground than the plain, changed my course to 90° E. of N. At 2½ miles again crossed the plain, and got upon low rising ground of ironstone and gravel, but still no water; changed to former bearing of 20° E. of N., and at 7 miles came upon a dry swamp, covered with long blue grass and deep holes, but still no water could we find. Proceeded another mile, and finding I was getting on rising ground, and the horses having done a long and heavy day's journey, camped without water. After leaving the swamp with the water (which was very boggy all round it) the country became similar to that of Sturt's Plains, surrounding Newcastle Water, being so full of deep holes that we were in danger of getting our necks broken, and also the horses' legs. The soil is good, and completely covered with grass and stunted gum-trees. In rainy weather it seems to be covered with water. There is no watercourse, nor any appearance of which way the water flows. A number of various kinds of birds were about. Wind variable, but mostly from S.W.; lat. 15° 56′ 11″.

May 30.—N.N.E. of blue-grass swamp. Wishing to see a little more of the country further on and endeavour to find where the birds get their water, I proceeded with Thring, leaving the other two behind with the horses, 3½ miles on the same course, following their flight. In ½ mile came again upon the stunted gum-plain splendidly grassed to above the horses' knees; can find no water, although the birds are still round about us; the same description of country continues from the swamp with the water to beyond this, consisting of small undulations of gravel and ironstone. Retraced my steps to where I had left the other two, and proceeded towards the depôt; at 9 miles the country was in a blaze of fire to the east of us. I am very thankful there was scarcely a breath of wind, which enabled us to pass within a quarter of a mile of it—had there been a strong wind we should have been in great danger, the grass being so long and thick. Returned to the depôt after 6 P.M., being all very tired with the shaking we have had the last two days by the horses falling into the holes nearly every step, and they also are nearly exhausted; twelve hours in the saddle over such a country is no easy task. It was my intention to have come back more to the east; but, having seen the smoke, I saw we should be in the middle of the fire, and so changed my intention. Wind S.W., very hot.

* (*c*) *June* 2.—Daly Waters. Leaving the party in charge of Mr. Kekwick, I started at 7·20 (course north), with Thring, Auld, and Frew; camped at 4·20. The whole day's journey has been through a splendid grass country, and open forest of gum-trees and other shrubs, some of them new to us. Here again we have also met with the bean-tree, the blossoms of a bright crimson, and at this

June 4.—Daly Waters. Preparing for a start to-morrow to the N.E. I shall take the water-bags; they may retain as much as will suffice for a drink night and morning for four horses. I shall proceed to the blue grass swamp that I found in my last N.N.E. course, trace that down as far as it goes, and, should there be no water, shall strike for the sources of the Wickham River. Wind S.S E.*

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season they seem to shed their leaves. The country passed over consisted mostly of undulations of ironstone and gravel, with a brown-coloured rock occasionally, between which were broad valleys of a light-coloured soil, all cracked and having many deep holes, which being hidden with the long grass, caused the horses to tumble into them, and made it very fatiguing both to them and us. I have been constantly in the hope all day of coming upon some water, but have been disappointed. After rain, this country can be passed over with the greatest facility, for we have passed holes that will hold water for a long time. The dip of this country is now to the eastward. To-day I think I have been running along where the dip commences from the table-land. It was my intention to have tried a journey to the north-west; but, from what I have seen of the country to-day, and on my other journeys to the north, as well as Mr. Gregory's description of it on the other side, I am led to believe that it would be hopeless to expect to find water there. To try it will only be losing time, and reducing the strength of my horses. I must now try on a N.E. course towards the Gulf of Carpentaria. I do not wish to go to the east if I can help it; but I must go where the water leads me. During the day's journey, we passed through three narrow belts of hedge-tree scrub, which was very thick. There does not seem to be so much of that as we get to the north, neither is there so much of the tall mulga; but we have not seen a drop of water since we left the camp. Camped without it Wind S. Day very hot. Lat. 15° 50' 20".

June 3.—Gum Forest. Fine country. I sent Thring on 3 miles to see if there was any change, there being a number of birds about that frequent the place where water is; I think there may still be a chance of falling in with some. He has returned, and can see none. Country the same as that travelled over yesterday. Returned to the depôt; arrived a little before sundown, and found all well. Wind light; S. Day again very hot.

* (*d*) *June* 5.—Started at 7·45 with Thring and Auld, taking all the water-bags full, also King and Billiatt to take back the horses that carry the water. I have chosen King for this purpose, as being the next best bushman to Thring, and one in whom I can place the greatest dependence to execute any charge I may give him with care and faithfulness. At 4 o'clock arrived at the blue grass swamp. Changed my course to 70° E. of N., following down the middle of it, which contains a great number of large deep holes in which water has been, but are now quite dry; followed it until it spread itself over the plain, causing a great number of deep cracks and holes completely covered with grass, gums and other trees, too thick to get an easy passage through. At sundown camped on the plain without water. A few hours before sundown the sky had a very peculiar appearance to the eastward, as if a black fog was rising or smoke from an immense fire at a long distance off, but it was too extensive for that. At sundown it assumed a more distinct aspect in the shape of black clouds coming from that direction. Wind, S.E.

June 6.—Plain east of Blue Swamp. Sent King and Billiatt back with the horses, while I proceeded with the other two on a course 70° E. of N. At 1¼ mile came suddenly upon a scrubby ironstone rise about 20 feet high. After passing over a rotten plain, full of holes and covered with grass and stunted gum-trees, proceeded to the top, from which we had a good view of the surrounding country—to all appearance one of the blackest and most dismal views a man ever beheld; even the splendid grass country I had been coming through has the same appearance. The cause of it is the trees being so thick, and some

June 8.—Daly Waters; strong winds still from S.E., and sometimes from the S.; day very hot.

June 9.—Last night, a little after sundown, Mr. Waterhouse was seized with a violent pain in the stomach, which was followed by a severe sickness, and continued throughout the night. This morning he is a little better. I think it was caused by eating some boiled gum which had been obtained from the nut-tree Mr. Kekwick discovered last year. When boiled, it very much resembles tapioca, and has much the same taste. I also ate some of it yesterday, which occasioned a severe pain in the stomach, but soon went off. Some of the others also felt a little affected by it, but none so bad as Mr. Waterhouse; on others it had no effect whatever, and they still continue to eat it. Mr. Waterhouse looks so ill that I think it desirable not to move the party to-day, and trust by to-morrow he will be quite well. Light wind from the S.E., with a few clouds.

June 10.—As Mr. Waterhouse is better, I shall move the party to-day. Started at half-past 8 A.M., following my former tracks; at half-past 4 P.M. camped at the Blue Grass Swamp, 26 miles without water. Wind S.E.; day very hot. Latitude 15° 56′ 31″.

June 11.—Started at 7 o'clock; course 70° E. of N. At 3 miles crossed the ironstone rise, and at 11 miles changed to N., to cut the chain of ponds, which I have named "Purdie's Ponds." At 1¾ mile on the last course, camped on the largest pond. The country that we have gone over, although there are a number of holes and cracks in it, is really of the best description, covered with grass up to the horses' bodies. We have passed several new trees and shrubs. The bean-tree is becoming more

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of them of a very dark colour, that nothing but their tops can be seen, which gives it the appearance of being a dense scrub. To the west there is an appearance of a scrubby rise—the one on which I have been on my other journeys to the north. No hills visible; all appears to be a level country. Proceeded down the gradual slope, crossing other two lower ironstone undulations, meeting occasionally with small rotten plains with holes, and covered with grass. At 5 miles the ground became firmer; at 7 miles met with what seemed to be a watershed. After a long search, found that the flow of the water was to the W. of N.; traced it a short distance to the south-east and found a small shallow pool of water and gave our horses a drink; and wishing to take advantage of anything that may take me to the north-west, I turned and traced it down; passed three ponds with some water in them, and at 3 miles came upon a fine large one, 2½ feet deep; followed it still on, but was disappointed on finding it terminating in a dry swamp, all cracked and full of holes; circled round it to see if the creek took up again, but could see no appearance of any. As this last pond will do for the party, I will return and bring them up, for there is a slight appearance of rain, and I wish to get them on as far as possible before the winter rain comes on. Returned to our last night's camp, where we arrived at sundown. Wind S.E., with few clouds.

June 7.—Plain east of Blue Swamp. Returned to the depôt, found all well; clouds all gone, but the wind blowing strong from the S.E.

numerous here; at this season, and in this latitude, it sheds its leaves, and the flower is in full bloom without them. The course of the ironstone rise seems to be north and south. Wind S.E.; weather a little cooler, but clouds all gone. Latitude 15° 52′ 58″.

June 12.—Purdie's Ponds. Preparing for another start to-morrow, with the water-bags. It takes two men nearly half a day to fill them; the orifices for filling them are a great deal too small; they ought to be at least 2 inches in diameter. The American cloth with which they are lined is useless in making them water-tight, and is a great annoyance in emptying them, for the water gets between it and the leather; it takes a long time to draw through again, and does not answer the purpose it was intended, for a piece of calico would have done far better. It is very vexing to bring things so far, and, when required, to find them nearly useless. Wind S.E., cloudy; nights cold, but the day hot.*

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* *June* 13.—Purdie's Ponds. Leaving Mr. Kekwick in charge of the party, started 8·15 with Thring and Auld, also King and Billiatt, to bring back the horses carrying the water-bags. Proceeded on a north course, and at 7 miles crossed what seemed to be a watershed, seemingly running to the W. of N. Halted the party, and sent Thring a short distance to see if the flow was in that direction. In a quarter of an hour he returned, and informed me that it was, but only a very slight one. Changed to N.N.W. to follow it. It gradually assumed the appearance of a small creek; at 2 miles came upon three small pools of water. I now resolved to follow it down and see where it went to; I should think there must be more water further on, its course is W. of N.; continued to follow it down, winding and twisting about very much to almost every point of the compass; at 7 miles from the pools found a little more water, but not a drop between. Allowed the horses to drink what there was, and proceeded down it. I sent Thring to follow it on one side, while I with the others kept on the other; by this we were enabled to cut off the bends and see all the creeks, so that no water could escape us. Twice it became very small, and I was afraid we were going to lose it altogether, but it commenced again and became a fine creek—not a drop of water; at 4·45 camped without it. Stony rises are now commencing, which are covered with gum and other trees, also a low scrub; they are very rough and running nearly west and south. The one on the west is a continuation of the one I crossed in coming to Purdie's Ponds. The general flow of the creek is north. Some of the new trees are growing very large on its banks. The cabbage-tree is growing here also; this is the first time I have met with it, sometimes growing to the height of 15 feet. All along the banks of the creek, and apparently for some distance back, is covered with an abundance of grass, but all dried up; in some places both horses and rider were completely hidden by it. Wind S.E.; few clouds. Lat. 15° 30′ 27″.

June 14.—Sent King and Billiatt back to the camp at Purdie's Ponds, whilst I proceed with the further examination of the creek; I find it now running to the E. of N.; and the stony rises are closing upon it at 2½ miles. They begin to assume the shape of hills, which causes the travelling to be rather rough. At 3½ miles the hills run close to the creek, and are precipitous; the bed is very rough and stony—so much so that I could not take the horses down it. Ascended a hill near the creek to see what it and the country a-head was like; the hills being so rough that I could not get the horses close enough to see if there was any water—dismounted and scrambled to the top of the precipices; was delighted to see below me a large hole of water. Sent the horses across a gully to another hill still higher, while I descended into the creek; found the bed very rough, having large masses of sandstone and ironstone—which rendered it impassable for the horses. Found the water to be deep and beautifully clear; proceeded down a little further, and

June 16.—Purdie's Ponds. It was late before the horses could be found. Proceeded to the first pools of water in the River Strangways, distance about 10 miles, and camped. Wind S.E.

June 17.—Started early and proceeded down the creek to the gorge, and camped; day very hot. We had some difficulty in finding a way down for the horses to drink, it being so very rough and stony, but at last succeeded. On the W. side there is a layer of rocks on the top of the hard sandstone, black and rugged, resembling lava; spinifex close to the creek. Wind S.E.

June 18.—Gorge, River Strangways. I shall require to have some of the horses shod for further exploration, and shall therefore remain here to-day to get that done. I sent Thring and King a little way down the creek to see what the country is, and if there is any more water. They went about 9 miles, but could see no more. In some places the country is sandy, and in others stony and grassy. Mr. Kekwick has discovered four new trees that we have not seen before, and several new shrubs. Some of the party succeeded in catching a few fine large fish, some of them weighing 2½ lbs. Some were of the perch family, and others resembled rock-cod, with three remarkable black spots on each side of their bodies. There are also some small ones resembling the gold fish, and other small ones with black stripes on their sides, resembling pilot-fish. Wind S.E. Latitude 15° 30′ 3″.

June 19.—Gorge, River Strangways. Leaving Mr. Kekwick in charge of the party, started with Thring, Auld, and King, to look for water. No rain seems to have fallen here for a long time back; the grass is quite dry and withered. Proceeded down the river, and, to avoid the hills, I went about a mile to the W., and found a very passable road; for about 2 miles we had sandy

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saw another large one. The hills close to the creek are very precipitous, and we shall have difficulty in getting the horses down to water; the hills, where they come close to the creek, are covered with spinifex. I shall, therefore, require to camp the party at the mouth of the gorge, where there is plenty of feed. The hill I had sent the horses to was so rocky they were unable to cross it, and there being still higher hills on a-head, I have left the horses with Auld, and, taking Thring with me, walked to the top of it to see what course the creek was taking—but they are all so much of the same height and appearance, that I can scarcely tell in which direction it runs; there is an appearance of a large creek coming in from the westward, and higher hills towards the north. I shall return and send the party on to this permanent water, and try to find an easy road over the ranges for them. I would have gone on to-day, but my horses are without shoes, and some of them are already lame, and the shoes I brought with me are nearly all exhausted; we have not been using any since shortly after leaving South Australia. Returned to our last night's camp where we had left the canvas tank with some water that the horses did not drink in the morning; gave them what remained, and proceeded up the creeks to the last water we saw yesterday—where we arrived at sundown and camped. Wind S.

June 15.—Returned to the depôt at Purdie's Ponds, River "Strangways," as I have named it, after the Commissioner of Crown Lands for South Australia, and found all well. Wind S.E., cool.

soil and spinifex mixed with grass, also a few stony rises of lime and sandstone. The country after that again becomes excellently grassed, the soil light and a little sandy. No water in the bed, which appears to have a very rapid fall; its general course is about N.N.E. At 12 miles, seeing a stony hill of considerable elevation, I left the bed, and went towards it. At the base of it was a deep creek. I was pleased to see a fine supply of water in it. I immediately sent Thring back to guide the party up here to-morrow, whilst I, with the two others, proceeded with the examination of the river further down. After following it for about 10 miles through a beautifully-grassed country, passing occasionally sandstone rises, with apparently scrub on their tops, camped at the base of one of them.

June 20.—First camp north of Gorge. Returned to the other water, and at noon met the party, and brought them on to this water. We have passed a few stringy-bark trees. In the bed of the river there is growing some very large and tall timber, having a dark-coloured bark, the leaf jointed the same as the shea-oak, but has not the acid taste; the horses eat it. There are also some very fine melaleuca-trees, which here seem to displace the gums in the river. We have also passed some more new trees and shrubs. Frew, in looking about the banks, found a large creeper with a yellow blossom, and having a large bean-pod growing on it. I shall endeavour to get some of the seed as we go on to-morrow. I shall now move on with the whole party, and I trust to find water in the river as long as I follow it,—its banks are getting much deeper and broader, and likely to retain water,—for it is dreadfully slow work to keep going on in search of water. Before this I could not do otherwise, in consequence of the season being so very dry. Since the commencement of the journey, the only rain that we have had to have any effect upon the creeks was at Mr. Levi's station, Mount Margaret; since then we have had only two or three showers, which have had no effect upon the creeks. Light winds, S.E. Latitude 15° 15′ 23″.

June 21.—Started, following the river down; it frequently separating into two or three channels, and again joining. Numerous small watercourses are coming in on both sides, from east and west; it winds about a great deal; its general course to-day for 9 miles has been nearly N.N.E. We passed a number of large lagoons, nearly dry, close to the stony hills; when full they must retain water for a long time. There is very little water in the main channel. At the 9 miles I found a large and excellent pool of water in one of the side creeks; it will last some time. It being now afternoon, and there being a nice open plain for the horses, I have camped. The river is now running through stony hills, which are very rough, composed of hard sandstone mixed

with veins of quartz, some of which are very hard, much resembling marble, with crystalline grains in it. We are now passing a number of stringy-bark along with gum and other trees, Mr. Kekwick still finding new shrubs. After we had camped, taking Thring with me, I ascended a hill a little from the camp, but was disappointed in not having an extensive view. To the north, which is now apparently the course of the river, there seems to be an opening in the range of stony hills. The dip of the country seems to be that way. At 33° E. of N. from the camp, about 8 miles distant, there is a high wooded tent-hill on the range; this I have named Mount Müeller, after my friend the botanist, of Victoria. All round about are rough stony hills with grassy valleys between, having spinifex growing on their sides and tops. The valley through which the main channel flows is good soil, and covered with grass from two to four feet high. Towards the N.W. the hills appear to be very rugged. Wind S.E., with a few clouds. Latitude 15° 10′ 40″.

June 22.—Spelled. A few heavy clouds about. We are now in the country discovered by Mr. Gregory. There is a great deal of very good timber in the valley, which is getting larger and improving as we advance. It is still very thick; so much so, that the hills cannot be seen until quite close to them. Wind variable. Latitude 15° 10′ 30″.

June 23.—This morning the sky is overcast with light clouds coming from the S.E. Started at 8 o'clock, still following the river, which winds about very much; its general course 10° E. of N. At 9 miles the channel became much smaller, and shortly afterwards separated into numerous small ones, and was apparently lost to me. I continued a north course, and at 12 miles struck a creek coming from the S.E.; at 2 miles from this creek, found another large one coming from the S.W., with shea-oak in it, which makes me suppose it is the River Strangways, which has formed again and joined this one. At the junction were numerous recent fires of the natives; there must have been a great many of them, for their fires covered the ground, also shells of the mussel which they had been eating. Searched for water, and found a little, but not sufficient for my horses, and too difficult to approach; course of the river is still to the north. One and a half mile from the junction found enough water that will do for me at night. As there seems to be so little water, and this day being exceedingly hot and oppressive, I have camped. The country travelled over to-day has been of the same description, completely covered with long grass; the soil rich, and a great quantity of cabbage-trees growing about it. Wind variable. Latitude 14° 58′ 55″.

June 24.—With the sun there came up a very thick and heavy fog, which continued for about two hours; it then cleared off, and

the day became exceedingly hot. The river, after rounding the hills (where we were camped), ran nearly east for 3 miles, meeting there a stony hill, which again throws it into a northerly course. I ascended the hill, but could see nothing distinctly, the fog being so thick. Descended, and pursued along the bed, separating frequently into many channels, and at 10 miles it spread into a large area, and its courses became small, with no water in them. The grass above our heads was so high and thick that the rear-party lost me, and could not find the Rocks; by "cooeying" brought them to me again. The scrub is very thick close to the river. Mr. Kekwick found cane growing in the bed, and also brought in a specimen of a new and most beautiful water-lily, now in Mr. Waterhouse's collection. At 12 miles, finding some water, the horses being tired in crossing so many small creeks, and seeing through the scrub and long grass, I camped at the open ground. The country gone over to-day is again splendidly grassed in many places, especially near the river, but has been burned recently by the natives. There are a great number of them running along the banks. The country now seems to be thickly inhabited. Towards the E. and the N.E. the country is in a blaze; there is so much grass the fire must be dreadful. The day has been most oppressively hot, with scarcely a breath of wind. Latitude 14° 51′ 51″.

June 25.—Started at 9 o'clock; course about 70° E. of N., following the channel. I expect, in 2 or 3 miles, to meet with the Roper; at 3 miles struck a large sheet of deep clear water, on which were a number of natives, with their lubras and children; they set up a fearful yelling and squalling, and ran off as fast as they could. Rounded the large sheet of water, and proceeded along it. At 1 mile, three men were seen following; halted the party, and went up to them. One was a very old man, one middle-aged, the third a young, stout, well-made fellow; they seemed to be friendly. Tried to make them understand by signs that I wished to get across the river; they made signs, by pointing down the river, by placing both hands together, having the fingers closed, which led me to think I could get across further down. They made signs for us to be off, and that they were going back again. I complied with their request, and we bade each other a friendly good-bye; we following down on the banks of the river, which I now find is the Roper. At 7 miles, tried to cross it, but found it to be impossible; it is now divided into a number of channels, very deep, and full of running water. Proceeded further, and tried it at several places, but with the same result. At 12 miles, camped close to a steep rocky hill on the north side of the river. Searched all round for a crossing, but was unable to find one. To the eastward the country is all on fire. The banks of the river are thickly

lined with cabbage-trees, also the cane, bamboo, and other shrubs. Two small turtle-shells were picked up by the party at the native-camp. The country is still of the same fine description. We are now north of Mr. Gregory's tracks. Latitude 14° 5′ 0″. Wind variable.*

June 28.—As I will be short of meat I remain here to-day to cut up the horse (*v.* foot-note) and dry him. The water of this river is most excellent; the soil is also of the best description; and the grass, although dry, most abundant, from 2 to 5 feet high. This is certainly the finest country I have seen in Australia. We passed three rocky hills yesterday, not high, but having grass up to their tops, round which the river winds at their base, forming large and long reaches of water. On the grassy plains it forms into different channels, and is thickly timbered with shea-oak, gum, cabbage-trees, and other trees and shrubs. Wind variable.

June 29.—We are all enjoying a delightful change of fresh

* *June* 26.—As I cannot find a crossing, I shall have to return to my last camp and try to cross there. Arrived and camped. Day again oppressively hot. Almost immediately on leaving our camp this morning, I observed native-tracks on ours, close to it; they must have followed us up last night, although we saw nothing of them; they are not to be trusted, they will pretend the greatest friendship one moment and spear you the next; they have been following us to-day, but keeping on the other side of the river and setting fire to the grass as they go along. I wish it would rain, and cause the grass to become green, so as to stop them burning, as well as to give me some fresh food for the horses, for they now begin to show the want of it very much,—it is so dried up that there is little nourishment in it; some of them are beginning to look very poor, and are much troubled with worms. My journeys have been very short last week in consequence of my being so weak from the effects of scurvy and a severe attack of dysentery, for I have scarcely been able to endure the motion of horseback for four hours at time; but having lately obtained some native cucumbers, I find they are doing me a deal of good, and hope by next week to be all right again. Wind S.; lat. 14° 51′ 51″.

June 27.—West Roper River. Started on a course of 320°, crossing the river, and at 3½ miles again struck the Roper, running; followed it up, coursing nearly from the west, but winding about very much, and having many branches, which makes it very difficult for me to get the turns correctly. It is a splendid river. We have passed many brooks and deep reaches of water some miles in length, and the country could not be better—it is really magnificent. At 2·30 I was informed that we were short of a horse; sent Mr. Kekwick and Thring back to see where he was left—we have had to cross so many boggy, nasty places, with deep water and thick scrub, that he must have been missed at one of these. The general course of the river to-day has been 280°. Distance 15 miles. Messrs. Kekwick and Thring are returned; they found the horse bogged in a side creek; it was so thick with cabbage-tree that they passed in searching for him two or three times; they had great difficulty in getting him out, but at last succeeded, and arrived at the camp before dark. A short time before that, another horse got into a very deep and rapid channel of the river, the top of the banks projecting so much that he could not get out, and, the gum-trees having fallen across both above and below him, he was completely fixed; we endeavoured to get him out, but it got so dark that we could not see him, and, the rope breaking that we were pulling him by, he got his head under water, and was drowned in a moment; we then found that the cause of the rope breaking was that he had got one of his hind-feet entangled in a sunken tree. It being now so dark we can do no more to-night, and have left him in the water until daylight. Wind S.E.; lat. 14° 47′ 26″.

meat from dry. It is a great treat, and the horse eats remarkably well, although not quite so good as a bullock. At sundown the meat is not all quite dry; but I think we shall be able to preserve the greater part of it. The natives are still burning the grass round about us, but they have not made their appearance either yesterday or to day. Wind variable.

June 30.—Started at 8·10, course west, following the river up, which winds about very much from north-west to south, and at last to south-east; when coming close to where the grass was on fire, finding a good ford, crossed the party to the north-east side. At 15 miles came upon a large reedy swamp, through which the river seemed to flow, and again at 20 miles came upon the river running into the swamp, and coming from the N.N.W. Although travelling 20 miles, we have not made more than 10 miles in a straight line —the general course is west. The country is of the same excellent description. We have passed the stony rises on the north side of the river, which are covered with grass to their tops. After crossing the river I ascended another of the same kind. To the south are a few hills scattered over the grassy plains, with lines of dark-green trees between them, showing that they are creeks flowing into the river, whose junctions we have been crossing to-day; the same to the south-west, and at W. 20″ S. the distance appears level, with a single peak just visible. To the north-west seemingly stony hills; to the north the same; to the east I could see nothing, for the smoke conceals from me the country—it is all on fire. The river is still running very rapidly, and, as this is a different branch to those previously discovered, I have named it "the River Chambers"—after my lamented friend James Chambers, Esq., whose zeal in the cause of Australian exploration is already well known. A short time before sundown a number of natives were seen approaching the camp; we were immediately prepared for them. I sent Mr. Kekwick forward to see what their intentions were—friendly or hostile. I immediately followed. On reaching them they appeared quite friendly. There were three men, four lubras, and a number of children. One, an old man, presented a very singular appearance—his legs about 4 feet long, and his body in all 7 feet high, and so remarkably thin that he appeared to be a perfect shadow. Mr. Kekwick having a fish-hook stuck in his hat, which immediately caught the tall old fellow's eye. he made signs of its use, and that he would like to possess it. I told Mr. Kekwick to give it to him, which seemed to please him much. After examining it he handed it over to a young man, seemingly his son, who was a fat stout fellow, and who was laughing nearly all the time. The other was a middle-aged man of the ordinary height. The women were small, and very ugly. Wind S.E.; lat. 14° 47′ 24″.

July 1.—Before sunrise the natives again made their appearance, sixteen in number, with small spears. Sent Mr. Kekwick to see what they wanted. On his coming up to them they put two fingers in their mouths, signifying that they wanted more fish-hooks, but we had no more to spare. They remained looking at us until the horses were packed and started. After Thring and Frew had brought in the horses, they rode up to where they were; they (the natives) did not fancy being too near the horses, but having dismounted, it gave them confidence, and they returned again. Thring opened the lips of one of the horses, and showed them his teeth; the appearance of which did not suit their taste. Some of them thought the further off they were from such weapons the better, and ran off the moment they saw them; others remained, but kept at a respectful distance. Thring pulled a handful of grass, and it amused them much to see the horses eating it. After starting they followed us for some miles, when Mr. Waterhouse observing a new pigeon shot it. They did not like the report of the gun, went off, and we saw no more of them. Started at 8·20, following the river on a course 30° E. of N. After 1 mile it gradually came round to the south-east, and was a running stream in that direction. As that course would take me too much out of my road, I changed my bearing to a north-west, to an opening between the hills. After passing a number of fine ponds, many of them with water in them, came upon a large creek, having long reaches of water in it, but not running. It winds about a great deal. Its general course to-day has been W.N.W. The reedy swamp must be a mass of springs, since it causes the Roper to run with such velocity. A little after 1 o'clock camped. The journey to-day has been rough, having so many small creeks to cross, and the day being excessively hot, the horses seem fagged. They have been covered with sweat since shortly after starting until now, and as some of the drowned horse is not quite dry, I have halted earlier than I intended. The country gone over to-day is of the same description—beautiful soil, covered with grass. We occasionally met with stony hills coming down to the creek, also well-grassed and timbered to their tops. Wind W., with heavy clouds from the S.E. Lat. 14° 41′ 39″.

July 2.—Followed the river up until 10 o'clock; we kept nearly a north-west course, it then went off to the south-west; as that would take me too much out of my course, I kept the north-west course, crossing the saddle of broken hills which we have now got amongst; and at 12 again met the river, now coming from the north through the hills, and followed it up, there being plenty of water. At a very large water-hole surprised some natives, who ran off at full speed when the rear of the party was passing their camp; one stout fellow came running up, armed with spears, and loaded with

fish and bags filled with something to eat. Mr. Kekwick rode towards him; the native held up a green bough as a flag of truce, and patting his heart with his right hand, said something which could not be understood, and pointed in the direction we were going; we then bade him good-bye, and proceeded on our journey. At 1 o'clock the river suddenly turned to the east, coming from very rough hills of sandstone and other rocks; at 1½ mile on that course it was coming from the south of east, which will not do for me; changed to the north and got into some terrible rough stony hills with grassy valleys between, but not a drop of water. It being now after 2 o'clock, too late to attempt crossing the table-land, I again changed my course to the south-east for the Chambers, and at 5·3 camped at a large water-hole at the foot of a stony rise lined with cabbage (palm) trees; the country, although rough, is well grassed to the top of the hills, with an abundance of permanent water in the river. I am sorry it is coming from the south-east, and have been in hopes it would carry me through this degree of latitude; to follow it further is only losing time, I shall therefore take to the hills to-morrow. Frew, on coming along, picked up a small turtle, alive. Light wind from the S.E.; heavy clouds from the S.W. Lat. 14° 32′ 30″.

July 3.—Started at 8·10, north-west course; at 1½ mile again struck the river coming from the W.N.W.; left it and followed its north-west course, and at another mile again came upon it with plenty of water; saw four natives, who ran off the moment they saw us. Followed the river, the hill coming quite close to it, very steep and rocky, composed of a hard sandstone, occasionally a little ironstone; at 9 miles again left the river, finding it was coming too much from the eastward, crossed the saddle of the two spurs again, came upon a creek which I think is the river; ran it up to the west for about a mile, but no appearance of water, left it, ascended a very rough rugged hill. In the creek we have just left there is a deal of limestone; crossed three more small spurs and small creeks, but not a drop of water. It being now afternoon, and wishing to see from what direction the river is coming, I changed to north-east, but finding that I was still among the rough hills, I ran due east for a short distance and made the river, now quite dry, and having a sandy bed. Followed it up, but seeing there were no hopes of water, turned and traced it down to try and find water; after following it for 3 miles, came upon a fine permanent hole of water, a short distance from where we left in the former part of the day. If it would only rain and put some water in the deep dry holes that are in the other creeks crossed to-day, I should then be enabled to steer a straight course for the Adelaide. It is very tedious and tiresome having to look for water every day; we have now reached to the top of one of the tributaries of the

Chambers—this is apparently the last water. It seems to take its rise in a grassy plain to the east of this; the valley through which the creek flows is well grassed, but the sides and the tops of the hills are spinifex, mixed with grass; all the small valleys are well grassed. Wind S.E.; lat. 14° 26′ 50″.

July 4.—Course to-day north-west. Following up the river to its sources; at 4 miles ascended a rise which was very rough, composed of sandstone, ironstone, and limestone, with ironstone gravel on the top. Descended on the other side, and at about 5 miles came upon a nice running stream, but very rough and stony round about it. After crossing several stony rises, in which we had some difficulty in getting our horses over, arrived at a nice broad valley with a creek running through it; course north-west. At a mile it received a large tributary from the E. of N., and the bed seems sandy; melaleuca and gum-trees in it, also the bean-tree. The valley is covered with grass from 2 to 4 feet high. There is a ridge of rough sandy stone hills, with occasional ironstone on each side, from the direction it was at first taken. I thought I was fortunate in meeting with one of the sources of the Alligator or Adelaide River. After following it for 5 miles, sometimes going west and south, it went through a stony gorge and seemed to run to the south, which was a great disappointment. I ascended one of the hills to see the country, but could see very little, it being so thickly wooded. To the north is the appearance of a range running to the east and west that I must endeavour to cross to-morrow if I do not find another creek running to the north-west. There is one benefit I shall derive from following down this creek a day, it will enable me to round the very rough sandstone range that runs on the north side of the creek. It is so rough that I could not take the horses over it. Camped at the gorge of this creek, which I suppose, from the course it is now taking, to be another tributary of the Chambers. The gorge is impassable for horses; it has a very pretty appearance, immense masses of rock —some thousands of tons in weight, which had fallen from the top of the cliff into the bed of the creek. Mr. Kekwick found a number of new plants, among them a fine climbing fern. Light winds, E. Plenty of permanent water in the creek. Lat. 14° 25′ 8″.

July 5.—Course at starting, 5° W. of N.. After travelling 2 miles over stony rises we ascended a low table-land with coarse grass and a little spinifex; at 6 miles reached a high stony tent-hill, which I ascended and named "Mount Shillinglaw." All round are stony hills and grassy valleys—dip of the country seemingly to the south. There is apparently a continuous range in the distance to the north-west, the Chambers Range. Changed my course to

325°, and at 4 miles struck another large branch coming from the north-east, and running apparently south—plenty of water in it. This I named the "Waterhouse," in honour of H. W. Waterhouse, naturalist to the expedition. Some of the horses are become so lame on account of the stones, they will not be able to travel another day. I have camped early to have them shod, for on Monday I intend taking a north-west course, to strike the source of the Adelaide. The country on the last course is again of the very best description and well grassed. The hills are stony—but abound with grass—composed of sandstone, ironstone, and occasionally a little limestone; the trees are the same as those on the Roper. Wind S.E.; lat 14° 18′ 30″.

July 6.—Halted at the Waterhouse River. Day again very hot. There is another branch a short distance off, which seems to come from the north-west; that I shall follow to-morrow if it continues the same course. I think these creeks we are now crossing must be the sources of the Adelaide flowing towards the dry river seen by Mr. Gregory running towards the north-west. Wind light; sky cloudy.

July 7.—Started at 8 o'clock; course, north-west. At 4 miles the creek is coming from the west, north-east, and east—I therefore left it, crossed two low stony rises, and again struck another creek coming from the north-east, with plenty of water; followed it for a short distance to the west, found it so boggy and the body of water so large, that I could not get the party round the stony hills. Returned about half-a-mile, and crossed stony rise, and again struck it. At 8 miles came upon a number of springs coming from the stony rises. Ascended one of the rises, which are not high, and found myself on a sandy tableland, which continued for 6 miles, having coarse grass and spinifex growing on it. Towards the last 2 miles it again became well grassed. The timber is stringy-bark, some splendid trees; amongst them gums and a number of pines, also very fine. The cabbage-palm still growing in the creeks in great numbers, some of them very tall, with several branches on the top. The first 8 miles was again over a splendid country, and the last three of the same description. A stony hill being in my course, I proceeded to the top of it, from which I had a good view of the country before me. At 10° S. of W. are two remarkable isolated table-hills, Mount Levi and Mount Watts, beyond which is the Chambers Range to the north-west; my view in other directions is obstructed by other hills, but to the west, about 1½ mile, is seemingly a creek, to which I shall go, and if there is water I shall camp. Proceeded, and found it a fine creek with plenty of water; following it about 1 mile to the north-west, when it became dry. There it seems to come from the south; there are

a great number of cabbage-palms on its banks. I hope it will soon come round to the north-west and continue on that course. Light winds, variable; lat. 14° 9′ 31″.

July 8.—Started on a north-west course; followed the creek a little way, but found it was running too much to the west of my course; left it, and proceeded to the north-west, crossing some stony rises, now composed of granite and ironstone, occasionally some hard sandstone. Crossing three small creeks running to the west, at 6 miles, came upon a large one with broad and long sheets of permanent water coming from the N.N.E., and apparently running to the south-west. In a small tree on this creek the skull of a very young alligator was found. The trees in this creek are melaleuca and gum, with some others. Proceeded across the creek, still going north-west, ascended two stony rises, and got up on low tableland with spinifex and grass, passing two stony hills, one on each side of my course. At 18 miles struck the head of a small creek flowing nearly my course; followed it down in search of water—now through a basaltic country. At 2 miles, came upon another large creek having a running stream to the S. of W., and coming from the N. of E. Timber, melaleuca, palm, and gum, with some of other descriptions. The country gone over to-day, although there is a mile or two of light sandy soil, is good for pasturage purposes; in the valley it is of the finest description. Light winds, variable; lat. 13° 58′ 30″.

July 9.—Started at five minutes to 8 o'clock, crossing the Katherine, the last stream I met, and proceeded on a north-west course over a basaltic country, splendidly grassed. At 5 miles, I ascended a high hill, but was disappointed in the view; W.N.W. course, over a great number of rises thickly timbered with gum. At 20° N. of W. is a high bluff point of the range—the country on that bearing does not seem to be so rough—no more visible but the range to the west and the hill between. Descended, and changed my course to the bluff point; at 1½ mile crossed a creek with water in it, coming from the north-east, and running to the south-west; at 3 miles further, arrived at the bluff. The basaltic country has now suddenly changed to slate, limestone, sandstone, and a hard white stone. Crossed three stony rises, and got upon a white sandy rise, with large stringy-bark trees growing upon it; and, there seemingly being a creek at the foot of it, from the number of green gums and palm-trees, I went down to it and found it to be springy ground, now quite dry, although the grass was quite green. Proceeded on the westerly course, expecting to meet with a creek; found none, but large springs coming from sandy rises. Having found water at 13 miles, and being so very unwell that I cannot proceed, I have been compelled to camp. There is an immense quantity of water coming from these springs; the soil round them

is of the best deep black alluvial—about a mile to the west is a strong stream running to the south-west from them. I have called them "Kekwick Springs," in honour of my chief officer. Wind light and variable; lat. 13° 54′ 12″.

July 10.—Started at 8 o'clock; crossed the springs without getting any of the horses bogged. Proceeded on a north-west course, but at 1½ mile again came upon springs and running water, the ground too boggy to cross it; changed to north—at 3½ miles on the course changed to north-west. Ascended some very rough stony hills, and got on top of sandy tableland thick with splendid stringy-bark, pines, and other trees and shrubs; amongst which, for the first time, we have seen the fan-palm, some of them growing upwards of 15 feet high. The bark on the stem is marked similar to a pine-apple, the leaf very much resembles a lady's fan set on a long handle, and after being cut a short time closes in the same manner. At half-past 1, crossed the tableland —breadth, 13 miles. The view was beautiful, as we stood on the edge of a precipice—underneath, lower down, a deep creek thickly wooded running on our course; this picturesque precipitory gorge in the tableland; then the gorge in the distance; to the north-west are seen ranges of hills. The grass on the tableland is coarse, mixed with a little spinifex; about half of it had been burnt by the natives some time ago. We had to search for a place to descend, and had great difficulty in doing so, but at last accomplished it without accident. The valley near the creek, which is running a stream, is very thickly wooded with tall stringy-bark, gums, and other kinds of palm-trees, which are very beautiful; the stem growing upwards of 50 feet high, the leaves from 8 feet to 10 feet long, with a number of long smaller ones growing from each side, resembling an immense large feather; a great number of these shooting out from the top of the high stems, and falling gracefully over, has a very pretty, light, and elegant appearance. Followed the creek for about 2 miles down this gorge, and camped on an open piece of ground. The top course of the tableland is a layer of magnetic ironstone which attracted my compass upwards of 20°; underneath is a layer of red sandstone, and below that is an immense mass of white sandstone, which is very soft, and crumbling away with the action of the atmosphere. In the valley is growing an immense crop of grass, upwards of 4 feet high; the cabbage-palm is still in the creek. We have seen a number of new shrubs and flowers. The course of the tableland is N.N.W. and S.S.E. The cliffs, from the camp in the valley, to be from 250 to 300 feet high; beyond all doubt we are now on the Adelaide River. Light winds, variable; lat. 13° 44′ 14″.

July 11.—The horses being close at hand, I got an early start at 20 minutes past 7, course north-west. In a mile I got greatly

bothered by the boggy ground, and numbers of springs coming from the tableland, which I am obliged to round. At 2 miles got clear of them, and proceeded over a great number of stony rises, very steep; they are composed of conglomerate quartz, underneath which is a course of slates, the direction of which is north-west, and lying very nearly perpendicular, and also some courses of ironstone, and a sharp rectangular hard grey flint-stone. My horses being nearly all without shoes, it has lamed a great many of them, and having struck the river again at 15 miles, I camped; they have had a very hard day's journey. The country is nearly all burnt throughout; but those portions which have escaped the fire, are well grassed. I should think this is a likely place to find gold in, from the quantity of quartz, its colour, and having so lately passed a large basaltic and granite country—the conglomerate quartz being bedded in iron, and the slate perpendicular is a good sign. The stony rises are covered with stringy-bark, gum, and other trees, but not so tall and thick as on the tableland and close to it, except in the creek, where it is very large—the melaluca is also large. Since leaving the tableland, we have nearly lost the beautiful palms; there are still a few at this camp, but they are not growing so high—the cabbage-palm is still in the creek and valleys. Light winds from south-east. Country burning all round. Lat. 13° 38′ 24″. This branch I have named the "Mary."

July 12.—Started at half-past 7; course, north-west. At 1½ mile came up on a running stream coming from the north-east; had great difficulty in getting the horses across, the banks being so boggy. One got fixed in it and was nearly drowned; in an hour succeeded in getting them all safe across. At 6 miles I ascended a high, tall, and stony hill; the view is not good, except to the westward. In that direction there is seemingly a high range in the far distance appearing to run north and south; the highest point of the end of the range is west, to which the river seems to tend. There is still a slaty range on each side of the river, with quartz-hills close down to it; the timber the same as yesterday. The country has recently all been burned; but, judging from the small patches that have escaped, has been well grassed up to the pass of the hills. The valley and banks of the creeks are of beautiful alluvial soil. One new feature seen to-day is the growing of large clumps of bamboo on the banks of the river, from 50 feet to 60 feet in height, and about 6 inches through at the butt. I am now on one of the tributaries of the Adelaide River. A dreadful fire must have been here a few days ago; it has destroyed everything before it, except the green trees, to the edge of the water. Slight winds, variable; lat. 13° 35′ 58″.

July 13.—Spelled.

July 14.—As I have now got all the horses shod on the front feet, I shall proceed on a north-west course through the stony rises, which are still quartz and slate, splendidly grassed, with gums and other trees and bushes not too thick to get through with ease; crossing six small creeks, one with holes, with water in them; the third one, at 9 miles, crossed a large creek, which I have named "William's Creek," all running at right angles to my course. Immediately after crossing this last creek the country changed to granite. The rises are composed of immense blocks of it, with occasionally some quartz. The country has been all burned. The valleys between the granite rises are broad, and of first-rate soil; many of them are quite green, caused by springs oozing from the granite-rock. We here passed a number of trees resembling the iron-bark; also some like new ones, and many shrubs which Mr. Kekwick has found. Wind S.E.; lat. 13° 29′ 25″.

July 15.—Billiatt's Springs. I have named these springs in token of my approbation of his thoughtful, generous, and unselfish conduct throughout the expedition. I started at 20 minutes to 8 o'clock this morning, course north-west. Crossed granite and quartz rises, with broad valleys between, both splendidly grassed. At 3 miles crossed a small creek with water. At another mile the same creek again; one also to my line on the south-west side, and immediately went off to the south-west. At 6 miles the river came close to the line, and immediately went off to the west. Continued on my course through granite and quartz country, splendidly grassed, and timbered with stringy-bark and gums, pines, palms, nut-trees, and a wattle-bush, which in some places was rather thick, but not at all difficult to get through. At 10 miles again struck the river; it is now apparently running to the north. Changed to that course, but it soon left me. At 3½ miles on the north course struck another creek, running from the range north-east; it has an abundance of water, and is rather boggy. King's horse fell with him in it, but did no further injury than giving him a wetting. A few of the other horses stumbled and rolled about in it for a short time, but we got them all across without accident. Changed to west of north. At ½ mile reached a saddle between two hills; the west I ascended. The river now running between ranges to the west. They seemed a good deal broken, with some high points to the north-west. There is a higher one, seemingly running north and south, with apparently a plain between, about 4 miles broad, on which are four or five lines of dark trees; this leads me to suppose that the river is divided. The plain being very thickly timbered, I could not see distinctly which was the main channel. Descended, and proceeded on a north-west course. At 1½ mile struck the river, again running north. Changed to that, and at 2½ miles camped. The country is now all burnt; I am

obliged to stop where I can get feed for the horses. One of the channels comes close to the bank, east side, about 6 yards wide, and 2 feet deep, bed sandy; the main channel must be in the middle of the plain. The hill I ascended to-day has been under the influence of fire. It is composed of quartz and a hard dark-coloured stone. The quartz runs in veins throughout it—in places crystalline, and formed into spiral and many-sided figures; in places there is a crust of iron, also crystalline, as if it had been run between the stones. Wind S.E.; lat. 13° 17′ 22″.

July 16.—Started at 20 minutes to 8 o'clock; course north. The river runs off again to the north-west, and I have passed over an undulating country, all burnt, but the soil of the richest description. The rises are composed of quartz and a hard white stone, with occasionally a little ironstone. At 3 miles crossed a creek with water-holes; at 5 miles crossed another. At 7 miles came close to a high hill; ascended it. At the foot it is composed of a hard slaty stone, covered with a cake of iron; about the middle is quartz, and on the top conglomerated quartz. The view from south-west to north-west is extensive, but this, not being the highest hill, the rest is hidden. To the west is a high hill, bluff at both ends—seemingly the last hill of the range—its course apparently north-west and south-east. At this bluff hill the range seems to cease, or drops into lower hills. A branch of the river lies between it and me, but there are still a number of stony hills before I can reach it. To the north-west and north there are high and stony hills. The river now seems to run to the west, on a bearing of 30° N. of W. From 20 to 25 miles distant is another range, at the foot of which there is a blue stripe, apparently water, which I suppose to be the main stream of the Adelaide. Descended, as the country is too rough and stony to continue either to the north or north-west. I changed to 3° N. of W., crossed some stony hills and broad valleys with splendid alluvial soil, the hills grassed to the top. On that course struck the branch of the river; still very thick with the same kind of timber already mentioned. Most of the bamboos are dead; I suppose the fire has been the cause of it. I again find it running to the north; I turn to that course. At 3 miles struck a large creek coming from the east, with large sheets of water. Had to run it up a ½ mile before I could get across it. Crossed it all right, and passed through a beautiful valley of green grass. After that found that I was again on the stony rise, where every blade of grass had been burned off; and, not knowing how far they may continue, I have turned off again for the creek, to give the horses the benefit of the valley. The timber is the same as yesterday in some places; the stringy-bark is much larger. The banks of the river, when we first came upon it to-day, are high and stony. The range to the east seems to cease about here; we are

now crossing low undulations. I have seen a number of kangaroos to-day; they do not seem to be as large as those in the south. The valleys are composed of conglomerated ironstone underneath the soil. A large number of new birds seen to-day, some of them with splendid plumage. Wind S.E.; lat. 13° 7′ 21″.

July 17.—Started at 8 o'clock, course north-west. Passed over some stony hills, small creeks, and valleys well grassed. At 3 miles again met with the branch of the river—with bamboos and trees of the description same as before—a running stream, but not so rapid. At 5 miles, observing an open plain among the trees, and the river tending more to the westward, I changed my course to it, 15° west of north; found it to be open plain, of rich alluvial soil at places; at times it seemed to be subject to inundation, I suppose the drainage from the range to the eastward, which is distant about 4 miles. I am pleased it has been burnt; but where it has not the grass is most abundant: where the water seems to remain it is rather coarse. The plains are studded with lines of green gum-trees; and the palm-cabbage are numerous, which give them a very pretty park-like appearance. They continued for 10 miles, when made a small stony hill: we met with a large creek, with large holes of water in it, and, supposing I had got upon the plain that ran to the sea-coast, and seeing those I had passed over so dry, camped; and having sent Thring to a rise to see where the river is, he returned, but can see nothing of it; but reports high hills to the N.W. I am glad of this; for it is not my intention to follow the river round if I can get water in other places; for it has already been well described south of this by Lieutenant Helpman, when he came up in a boat; and I wish to see what the country is away from its banks. Wind S.E., with a few clouds from the north. For the last week the weather has been excellent, not too hot during the day, and cool and refreshing at night. The mosquitoes are very annoying; and the flies during the day are a perfect torment. This creek I have called "Priscilla's Creek." Latitude 12° 56′ 54″.

July 18.—Started at 15 minutes past 8 o'clock; course N.W. Passed over grassy plains and a stony rise: when at 3 miles, seeing the termination of a range in a bluff point, changed my course 310°; proceeded, still crossing stony hills, consisting of ironstone, slate, and a hard white rock, which is broken into rectangular fragments; also over broad valleys, which are covered with grass that, when green, must have stood very high, but is now so dry that it breaks off before the horses: my horse, being first, collects so much on his front legs that I have been obliged to stop, pull him back, and allow it to fall, so that he may step over it; go on, get another load, and do the same. At 6½ miles, after crossing a plain, crossed a deep bamboo-creek: this I have named "Ellen's Creek." Proceeded over two other stony rises and valleys of the

same description, and came upon extensive plains, well grassed, and of beautiful alluvial soil; crossing them towards the bluff point, at 15 miles, came upon the Adelaide between me and the bluff, which is about a mile further on: the river is about 80 yards wide, and so still that I could not see which way the current was. I suppose its being high-tide was the cause of this. The banks are thickly lined with bamboo, very tall and stout; the banks very steep, and 12 feet down to the water's edge: the water appeared to be of great depth, and entirely free from snags or fallen timber: the range on the opposite side of the river, for which I was directing my course, being the highest I have seen in this new country, I have honoured it by naming it after his Excellency the Governor-in-Chief of South Australia, "Daly Range," and its highest peak to the north "Mount Daly." Before reaching the river, at 13 miles, we passed a high conspicuous tent-hill, at a right angle, N.E. to our line: this I have named "Mount Goyder," after the Surveyor-General of South Australia. Followed the river on a north course for about a mile, when I was stopped by a deep side-creek of thick bamboo with water; turned to the east, rounded the bamboo, but found myself in a boggy marsh, which I could not cross: this marsh is covered with fine grass, in black alluvial soil, in which is growing a new kind of lily, with a large broad heart-shaped leaf, a foot or more across; the blossoms are 6 inches high, resemble a tulip in shape, and are of a deep brilliant rose-colour: the seeds are contained in a vessel resembling the rose of a watering-pot, with the end of each egg-shaped seed showing from the holes, and the colour of this is a bright yellow. The marsh is studded with a great number of melaleuca-trees, tall and straight: as I could not cross, I had to round it, which took me a little more than an hour, when I got upon some low undulating rises, not far from Mount Goyder, composed of conglomerate ironstone and ironstone-gravel, which seem to produce the springs which supply the marsh. Camped on the side of the marsh, to give the horses the benefit of the green grass; for some of them are still troubled with worms, and are very poor and miserable; and I have no medicine to give them; and there is not a blade of grass on the banks of the river, all having been burnt within the last four days. Native-smokes in every direction. Wind S.E., with a few clouds. Latitude 12° 49′ 30″.

July 19.—Started at 10 minutes past 9 o'clock; course 20° E. of N.: at 3 miles crossed some stony rises and broad alluvial grassy valleys: at 4 miles met the river; had to go a ½ mile to the S.E. to round it; again changed to my first course: at 7½ miles crossed a creek with water. The country to this is good, with occasionally a little ironstone and gravel, timber of stringy-bark, with occasionally a little low gum-scrub: having crossed this creek, we ascended a sandy table-land with an open forest of stringy-

bark (good timber), palms, gums, other trees, and bushes. It has been lately burnt, but the roots of the grass abound: this continued for about 3 miles. There is a small stony range of hills to the west, which, at the end of the 3 miles, dropped into a grassy plain of a beautiful black alluvial soil, covered with lines and groves of the cabbage-palm trees, which gives it a very picturesque appearance: its dip is towards the river. In 2 miles crossed it, and again ascended low table-land of the very same description as the other; at 14 miles struck another creek with water, and camped. The country gone over to-day, though not all of the very best description, has plains in it of the very finest kind: even the sandy tableland bears an abundant crop of grass. The trees are so thick that I can get no view of the surrounding country: the tall beautiful palm grows in this creek. Native-smokes about; but we have not seen any natives. There are large masses of voclanic rock on the sides of this creek. At about 1 mile to the eastward is a large body of springs that supply water to this creek, which I have named "Anna's Creek." Camped at 10 minutes to 3 o'clock. Wind variable; lat. 12° 39′ 7″.

July 20.—The mosquitoes at the camp have been most annoying; scarcely one of us has been able to close his eyes in sleep during the whole night. I never found them so bad anywhere; night and day they are at us. The grass in and on the banks of this creek is 6 feet high; to the westward it has long reaches of water, and is very thickly timbered with melaleuca, gum, stringy-bark, and palms. Wind S.E.

July 21.—Started at 8 o'clock; course N.N.W. At 3 miles, came upon another extensive freshwater marsh, too boggy to cross; there is rising ground to the north-west and north—the river seemingly between. I can see clumps of bamboos and trees, by which I suppose it runs at about a mile to the N.N.W. The three miles passed over is of a sandy nature, light brown colour, with ironstone gravel on the surface; volcanic rock occasionally cropping out. The borders of the marsh are of the richest description of black alluvial soil, and, when the grass has sprung after it has been burnt, has the appearance of a rich and very thick crop of green wheat. I am now compelled to alter my course to 30° S. of E., to get across a water-creek coming into the marsh, running deep, broad, and boggy, and so thick with trees, bushes, and strong vines interwoven throughout it that it would take a day to cut a passage through. At 3 miles we crossed the stream, and proceeded again on the N.N.W. course, but at 1½ mile were stopped by another creek of the same description; changed to east, and at half a mile was able to cross it also, and again went on my original bearing; continued on it for 3 miles, when we were again stopped by another running stream, but this

one I was able to cross without going far out of my course. Proceeded on the N.N.W. course, passing over elevated ground of the same description as the first 3 miles. At 17 miles came upon a thick clump of trees, with beautiful palm growing amongst them; examined it, and found it to have been a spring, but now dry. Proceeded on another mile, and was again stopped by what seemed to be a continuation of the large marsh; we now appeared to have got right into the middle of it. It is to be seen to the south-west, north-east, and south-east of us. Camped on a point of rising ground running into it. The timber on the rises between the creeks is stringy-bark, small gums, and in places a nasty scrub, very sharp, which tore a number of our saddle-bags. It is a very good thing the patches of it are not broad. The grass, where it has not been burned, is very thick and high—up to my shoulder when on horseback. About a mile from here, to the west, I can see what appears to be the water of the river, running through clumps of trees and bamboos, beyond which, in the distance, are courses of low rising ground, in places broken also with clumps of trees. The course of the river seems to be N.N.W. On the east side of the marsh is also rising ground; the marsh in that direction seems to run 5 or 6 miles before it meets the rising ground, and appears after that to come round to the north. Nights cool. Latitude 12° 28′ 19″. Wind S.E.

July 22.—Halted. As the marsh seems to run so much to the east, and not knowing how much further I shall have to go to get across the numerous creeks that appear to come into it, I shall remain here to day, and endeavour to find a road through it to the river, and follow up the banks if I can. I have a deal of work to do to the map, and our bags require mending. After collecting the horses, Thring tried to cross the marsh to the river, and succeeded in reaching its banks, finding firm ground all the way; the breadth of the river here being about 100 yards, very deep, and running with some velocity, the water quite fresh. He having returned with this information, I sent him, King, and Frew, mounted on the strongest horses, to follow the banks of the river till noon, to see if there is any obstruction to prevent my travelling by its banks. In two hours they returned with the dismal tidings that the banks were broken down by watercourses, deep, broad, and boggy. This is a great disappointment, for it will take me a day or two longer than I expected in reaching the sea-coast, in consequence of having to go a long way round to clear the marsh and creeks. The edge of the marsh was still of the same rich character, and covered with luxuriant grass; the rise we are camped on is also the same, with ironstone gravel on the surface. This seems to have been a favourite camping place for a large number of natives; there is a great quantity of fish-bones, mussel and turtle shells, at a little distance from the camp, close to where there was some

water. There are three poles fixed in the ground, and these have formed an equilateral triangle, on the top of which was a frame-work of the same figure, over which were placed bars of wood, its height from the ground 8 feet; this has apparently been used by them for smoke-drying a dead black-fellow. We have seen no natives since leaving the Roper, although their smokes are still round about us. On and about the marsh are large flocks of geese, ibis, and numerous other aquatic birds; they are so wild that they will not allow us to come within shot of them. Mr. Kekwick has been successful in shooting a goose; it has a peculiar-shaped head, having a large horny lump on the top, resembling a top-knot, and only a very small web at the root of his toes. The river opposite this, about a yard from the bank, is 9 feet deep. Wind variable, night cool.

July 23.—Started 20 minutes to 8 o'clock, course 22° E. of S. 1 mile to round the marsh; thence 1 mile south-east; thence east 6 miles; struck a large creek, deep and long reaches; thence three-quarters of a mile south before I could cross it. This I have named "Thring's Creek," in token of my approbation of his conduct throughout the journey. Thence east, 1½ mile; thence north 9 miles, when I again struck the large marsh. Thring's Creek has been running nearly parallel with the north course until it empties itself into the marsh. The country gone over to-day, after leaving the side of the marsh, which, as well as the banks of the creek, and also some small plains, are of the same rich description of soil, covered with grass; the other parts are slightly elevated, the soil light, with a little sand in the surface, of a brown colour; timber, mixture of stringy-bark and gums, with many others; also a low thick scrub. In many places it has lately been burnt; the few patches that have escaped abound in grass. I have come 12 miles to the eastward to try to round the marsh, but have not been able to do so. The plains that were seen from the river by those who came up it in boats, is the marsh; it is covered with luxuriant grass, which gives it the appearance of extensive grassy plains. I have camped at where the Thring spreads itself over a portion of the marsh. There is rising ground to the north-west, on the opposite side, which I suppose to be a continuation of the elevated ground I passed before crossing the creek, and the same that I saw bearing north from the last camp. I suppose it runs in towards the river. Wind S. Latitude 13° 22′ 30″.

July 24.—Started 8·20, course nearly north. I have adopted this course in order to make the sea-coast as soon as possible, which I suppose to be distant about 8½ miles; by this I hope to avoid the marsh. I shall travel along the beach to the north of the Adelaide. I did not inform any of the party, except Thring and Auld, that I was so near to the sea, as I wished to give them a surprise on reaching it. Proceeded through a light soil, slightly elevated, with a little

ironstone on the surface, the volcanic rock cropping out occasionally, also some flats of black alluvial soil; the timber much smaller, approaching scrub, showing that we are nearing the sea. At 8½ miles, came up in a broad valley of black alluvial soil, covered with long grass. From this I can hear the wash of the sea on the other side of the valley, which is rather more than a quarter of a mile wide. Here I found growing a line of thick heavy bushes, very dense, indicating the boundary of the beach. Crossed the valley and entered the scrub, which was a complete network of vines. Stopped the horses to clear a way, whilst I advanced a few yards on to the beach, and was gratified and delighted to behold the waters of the Indian Ocean in Van Diemen's Gulf, before the party with the horses knew anything of its proximity. Thring, who rode in advance of me, called out "The Sea!" which so took them all by surprise, and they were so astonished, that he had to repeat the call before they fully understood what was meant. Hearing which, they immediately gave three long and hearty cheers. The beach is covered with a soft blue mud; it being ebb tide I could see some distance; found it would be impossible for me to take the horses along it; I therefore kept them where I had halted them, and allowed half the party to come on to the beach and gratify themselves by a sight of the sea, while the other half remained to watch the horses until their return. I dipped my feet and washed my face and hands in the sea, as I promised the late Governor, Sir Richard MacDonnell, I would do if I reached it. The mud has nearly covered all the shells; we got a few, however. I could see no sea-weed. There is a point of land some distance off, bearing 70°. After all the party had been some time on the beach, at which they were much pleased and gratified, they collected a few shells. I returned to the valley, where I had my initials cut on a large tree (J. M. D. S.), as I intended putting my flag up at the mouth of the Adelaide. Proceeded on a course of 302° along the valley; at 1½ mile, coming upon a small creek, with running water, and the valley being covered with beautiful green grass, I have camped to give the horses the benefit of it. Thus have I, through the instrumentality of Divine Providence, been led to accomplish the great object of the expedition, and take the whole party through as witnesses to the fact, and through one of the finest countries man would wish to pass—good to the coast, and with a stream of running water within half-a-mile of the sea. From Newcastle Water to the sea-beach, the main body of the horses have been only one night without water, and then got it within the next day. If this country is settled, it will be one of the finest colonies under the Crown, suitable for the growth of any and every thing—what a splendid country for producing cotton! Judging from the number of the pathways from the water to the sea-beach, across the valley, the natives must be very numerous;

we have not seen any, although we have passed many of their recent tracks and encampments. The cabbage and fan-palm trees have been very plentiful during to-day's journey down to this valley. This creek I named "Charles's Creek;" it is one by which some large bodies of springs discharge their surplus water into Van Diemen's Gulf. Its banks are of soft mud, and boggy. Wind S. Lat. 12° 13′ 30″.

July 25.—Charles's Creek, Van Diemen's Gulf. I have sent Thring to the south-west to see if he can get round the marsh. If it is firm ground, I shall endeavour to make the mouth of the river by that way. After a long search, he returned and informed me that it was impracticable, being too boggy for the horses. As the great object of the expedition is now attained, and the mouth of the river already well known, I do not think it advisable to waste the strength of my horses in forcing them through; they have still a very long and fatiguing journey in recrossing the continent to Adelaide, and I do not see what object I shall gain by pushing them through to it, my own health being so bad that I am unable to bear a long day's ride. I shall therefore cross this creek, and see if I can get along by the sea-beach, or close to it. Started, and had great difficulty in getting the horses over, although we cut a large quantity of grass, putting it on the banks, and on logs of wood which were put into it. We had a number bogged, and one of my best horses I was nearly losing, and was obliged to have him pulled out with ropes; after the loss of some time we succeeded in getting them all over safely. Proceeded on a W.N.W. course, over firm ground of black alluvial soil. At 2 miles, came upon an open part of the beach; went on to it, and again found the mud quite impassable for horses. In the last mile we have had some rather soft ground. Stopped the party, as this travelling is too much for the horses; and, taking Thring with me, rode 2 miles to see if the ground was any firmer in places; found it very soft where the salt water had covered it, in others not so bad. Judging from the number of shells banked up in different places, the sea must occasionally come over this, I saw at once that this would not do for the weak state in which my horses are; I therefore returned to where I had left the party, resolved to recross the continent to the City of Adelaide; had an open place cleared, selected one of the tallest trees, stripped it of its lower branches, and on its highest branch fixed my flag, the Union Jack, with my name sewn in the centre of it. At 1 ft. S. from the foot of the tree is buried, about 8 inches below the ground, an air-tight tin case, in which is a paper with the following notice:—

South Australian Great Northern Exploring Expedition.

The exploring party, under the command of John M'Douall Stuart, arrived at this spot on the 25th day of July, 1862, having crossed the entire Continent of Australia from the Southern to the Indian Ocean, passing through the centre.

They left the city of Adelaide on the 26th day of October, 1861, and the most northern station of the colony on the 21st day of January, 1862. To commemorate this happy event, they have raised this flag bearing his name. All well. God save the Queen!

[Here follow the signatures of myself and party.]

As this bay has not been named, I have taken this opportunity of naming it "Chambers Bay," in honour of Miss Chambers, who kindly presented me with the flag which I have planted this day, and I hope this may be the first sign of the dawn of approaching civilization. Exactly this day nine months the party left North Adelaide. On the tree on which the flag is placed is cut on the bark—DIG ONE FOOT S. We then bade farewell to the Indian Ocean, and returned to Charles's Creek, where we had again great difficulty in getting the horses across, which was at last accomplished without accident. We have passed numerous and recent tracks of natives to-day; they are still burning the country at some distance from the coast. Wind S.E. Latitude 12° 14′ 50″.

[The return march was commenced next day, and lay over almost the same ground traversed in coming north. The drought, however, which had so thwarted them on the journey up, now set in with tenfold severity, many even of the larger ponds having dried up in the interim. Mr. M'Douall Stuart himself suffered severely from his most distressing malady, accompanied by entire prostration, which brought him to death's door. Ultimately the entire party succeeded in reaching Mr. Jarvis's station, whence they reached Mount Stuart Station on 10th December.]

In conclusion (remarks Mr. Stuart), I beg to say, that I believe this country (*i.e.* from the Roper to the Adelaide, and thence to the shores of the Gulf) to be well adapted for the settlement of an European population; the climate being in every respect suitable, and the surrounding country of excellent quality and of great extent. Timber, stringy-bark, iron-bark, gum, &c., with bamboo 50 to 60 feet high on the banks of the river, are abundant and at convenient distances. The country is intersected by numerous springs and watercourses in every direction. In my journey across I was not fortunate in meeting with thunder-showers or heavy rains, but, with the exception of two nights, I was never without a sufficient supply of water. This will show the permanency of the different waters, and I see no difficulty in taking over a herd of horses at any time.

XIV.—*The Upper Basin of the Nile, from Inspection and Information.* By Captain J. H. Speke, F.R.G.S.

[In publishing the following observations, with the accompanying Map and Tables, relating to the part of the interior of Africa traversed by Captains Speke and Grant, the Council regret that so very important a subject should be illustrated, in their Journal, only by this short memoir, which Captain Speke has entitled the 'Upper Basin of the Nile.' As the author has not transmitted, for publication in the Transactions of the Royal Geographical Society, any other materials or diary of his travels, the reader must look for further information in the published work of Captain Speke, respecting the important expedition with which he was entrusted, and in which he has been supported throughout by the President and Council of the Society, as testified indeed by Captain Speke himself in the concluding paragraph of his memoir.]

In treating of the subject comprehended in the general designation of the Basin of the Nile, I will lead off from Kazé—lat. 5° s., long. 33° E.—an Arab-merchant depôt gradually expanding into a colony, situated in Unyamuézi, or the Land of the Moon. Here, at Kazé, in 1857, we first heard that the Victoria N'yanza was the largest lake in these regions. Sheikh Snay* was our informant; and he said he thought it was the source of the Jub River. Captain Burton was my interpreter;† and we both of us agreed it was more likely to be the source of the Nile. I then, with Bombay as an interpreter,‡ heard from Snay and other Arabs that the Kitangulé and Katonga rivers ran out of the N'yanza, and another river (which is the Nile, but obviously thought by some of the Arabs to be the upper portions of the Jub) ran into the N'yanza. Further argument explained this away, and showed me that the Arabs, by their peculiar mode of expression, spoke of the flow of a river in the reverse manner to that in which we are accustomed to speak of the direction of the current of a river.§ I also heard from Snay and other Arabs, that sailing-vessels frequented some waters to the northward of the Equator, which con-

* Sheikh Snay bin Amir el Harisi was a most intelligent Arab merchant, to whom the first expedition was indebted for much acceptable aid and many geographical details. An account of him is given in Burton's 'Lake Regions of Equatorial Africa,' vol. i. pp. 324, 325, &c. His reported death is related in Speke's Journal, pp. 97, 98.—[Ed.]

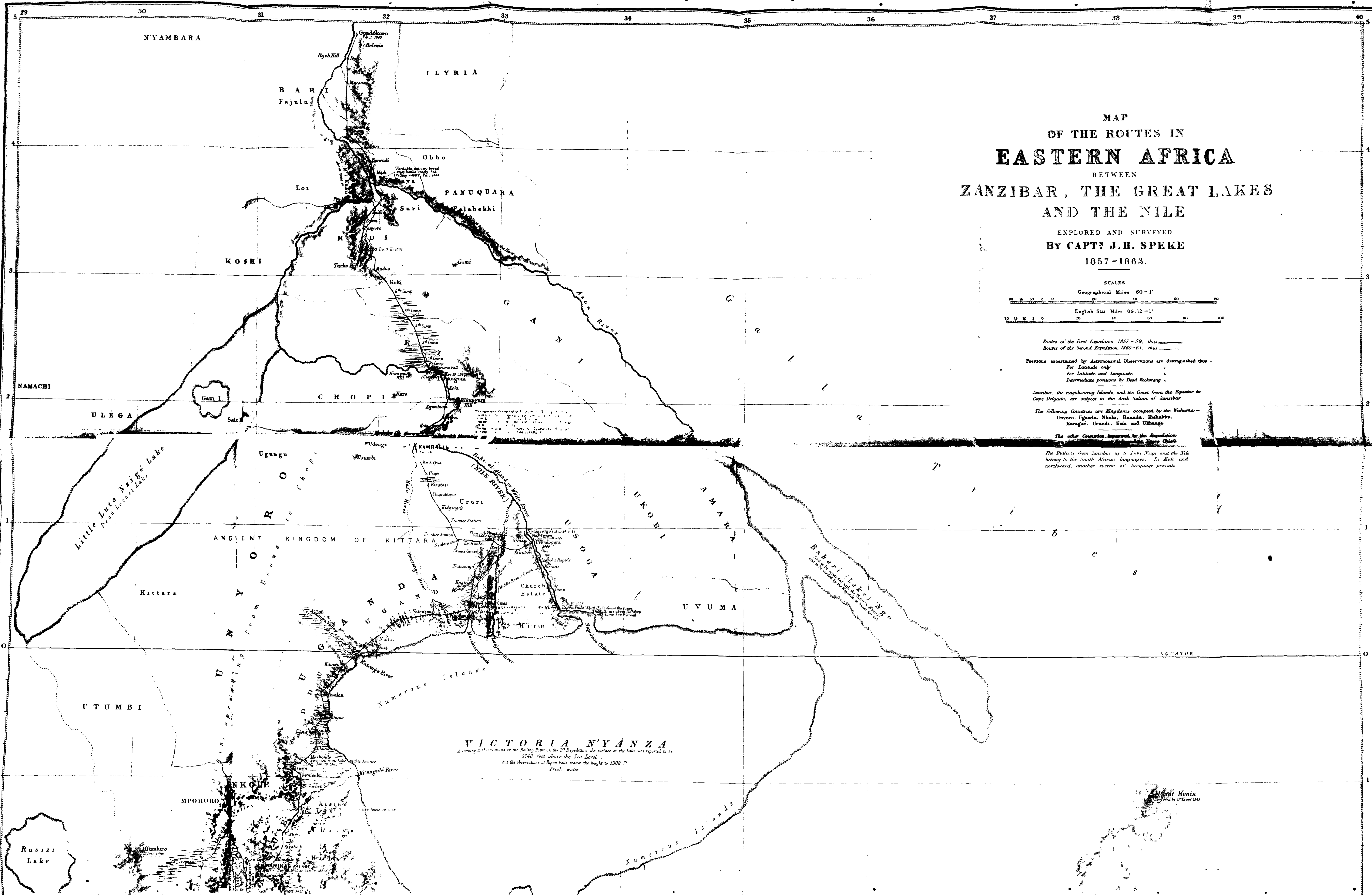
† Captain Burton, by his intimate knowledge of the Arabic language, was enabled to acquire from the traders many, and as they have proved to be, correct particulars of the lake and the northern countries. They are given in Chapters IX. and X. of the Journal of the Royal Geographical Society, vol. xxix., pp. 259-297.—[Ed.]

‡ Bombay was my constant interpreter throughout the journey.

§ Other travellers have been perplexed by this kind of phraseology when in conversation with ignorant Arabs.



Lake
KEREWE I^D
Urundi
Ushaki
RUANDA
UZIGE
Akenvara Lake
SUWARORA'S
USUI
UKHANGA
Ukungu
Uyofu
Ugombé
Urangua
Ugomba
Usambiro
Utambara
Ruzewé
Uréwé
Rungua
Uyogo
Quande
Ukumbi
Mininga
Msalala
Uhindi
Utusi
Ulaswanda
Usabi
Ukwimba
Uumba
Unatiya
Ugolo
Usyoma
UNYAMWEZI
UKUMBI
UVIRA
UBEMBE
UGOMA
UGUHHA
UTHEMBUE
UKATETE
URUWA
SINZE
URUNDI
UHHA
UBUHHA
Ujiji
Kawele
Jambeho
Wakhuma
UVINZA
UTONGUE
Kobogo
Kirira I
Kasenge I
Kabizia I
MSENE
Wale Nullah
Ukalaganza
Usagari
UGARA
KAZEH
TABORA
Mangewa
Rubuga
Kualé
UKIMBU
Tura
Camp
MGUNDA MKHALI
Nguru
UTAKAMA
UKONONGO
Unyanguira
KHOKORO
Kiwéle
Rukwa Lagoon
Supposed to join the Tanganyika Lake during the Rainy Season
M^t Mpimbué
Hot Spring
FIPA
Inhabited by the Wapoka, a pastoral people, probably identical with the Wahuma
Gururiru
Kipembawe
Usanga
Usenga
Wamia a pastoral People naked
URORI
Ruaha Nullah
TANGANYIKA LAKE
1844 f^t above the Ocean
USOWA
Usafua
Nika
Ulungu
Ubeiwe
M^t Chumpiri
Unyamanga
MARUNGU
LUWEMBA
Ivory Mart
Arab March to Lucenda
Caravan Route to Kitata for copper
Route to Lucenda
Marungu River
UUNGU
UBENA
UGOGO
Mzanza
KANYENYE
Mdaburu
Mdaburu Nullah
UHEHE
USAGARA
Ugogi
Rubeho
ZUNGOMERO
Mgeta R.
Uraguru
Mkambaku Hill
Ukami
Mukondokua River
Wami River
UZEGUHA
Phongue Hill
Uziraha
Mugogoni
Madege Makuba
Madege Madoga
Kidunda
UZARAMO
Rufiji or Lufiji River
Uranga R
UMUERA
Kingani River
Dunda
Konduchi
MBOAMAJI
ZANZIBAR
ZANZIBAR ISLAND
ZANZIBAR CHANNEL
C. Bouillon
Kuale I
Koma I.
MAFIA I^D
Lufiji P^t
Songa I.
Kilua P^t
KILUA or QUILOA
INDIAN OCEAN
Kilima-Njaro
UKAMBANI
Shira
CHHAGA
Jipe Lake
Bura
Teita
WANIKA
MOMBAS
Chala River
USUMBARA
FUGA
Makumbara Hills
PANGANI
Pangani Bay
Tongue
PEMBA CHANNEL
PEMBA I^D
Nangowy P^t
Masai Tribes
Longitude East of Greenwich
29
30
31
32
33
34
35
36
37
38
39
40
2
3
4
5
6
7
8
9
J. Murray, Albemarle S^t London


MAP
OF THE ROUTES IN
EASTERN AFRICA
BETWEEN
ZANZIBAR, THE GREAT LAKES
AND THE NILE
EXPLORED AND SURVEYED
BY CAPTN J.H. SPEKE
1857-1863.
SCALES
Geographical Miles 60 = 1°
English Stat Miles 69.12 = 1°
Routes of the First Expedition 1857 - 59, thus
Routes of the Second Expedition, 1860 - 63, thus
Positions ascertained by Astronomical Observations are distinguished thus -
For Latitude only
For Latitude and Longitude
Intermediate positions by Dead Reckoning
Zanzibar, the neighbouring Islands, and the Coast from the Equator to Cape Delgado, are subject to the Arab Sultan of Zanzibar
The following Countries are Kingdoms occupied by the Wahuma - Unyoro, Uganda, Nkolo, Ruanda, Kishakka, Karagué, Urundi, Usui and Ukhanga.
The other Countries traversed by the Expedition
The Dialects from Zanzibar up to Luta Nzigi and the Nile belong to the South African languages. In Kidi and northward, another system of language prevails
N'YAMBARA
Gondokoro
Feb.15 1863
Belenia
Rajeb Hill
ILYRIA
BARI
Fajulu
Obbo
Madi
Fordable, not very broad steep banks rocky bed falling waters, Feb.1 1863
Loi
PANUQUARA
Suri
Palabekki
Paira
Panyoro
MADI
KOSHI
Turks Hill
Mudua
Gomi
Koki
6th Camp
5th Camp
4th Camp
3d Camp
2d Camp
1st Camp
Karuma Fall
Kisuga Hill
Kara
Koki
Kikungura Hill
Kyumbura
GANI
Asua River
Galla Tribes
NAMACHI
ULÉGA
Gazi I.
Salt
CHOPI
Udongo
KAMRASI'S
Usumbi
Ugungu
Little Luta Nzigé Lake
Dead Locust Lake
UNYORO
from Usowa to Chopi
ANCIENT KINGDOM OF KITTARA
Kittara
Kafu River
Utuh
Kiratosi
Chagamoyo
Kidgwiga's
Ururi
Frontier Station
Grants Camp
Namaouja
Bahr el Abiad or White River
(NILE RIVER)
Nyamyongo's Aug 14 1862
Urondogani
Isamba Rapids
Kirindi
USOGA
UKORI
AMARA
Church Estate
Ripon Falls 3308 ft above the Ocean
Napoleon Channel
UVUMA
Bahari (Lake) Ngo
Said to be connected with the Victoria Nyanza, and to be visited by the Waganda, in boats for salt
UGANDA
Mwerango River
Katonga Valley
Katonga River
Murchison Creek
Luajerri River
Kituntu
Ugonzi
Masaka
Numerous Islands
UTUMBI
EQUATOR
VICTORIA N'YANZA
According to observations of the Boiling Point on the 1st Expedition, the surface of the Lake was reported to be 3740 feet above the Sea Level,
but the observations at Ripon Falls reduce the height to 3308 ft
Fresh water
Mashonde
Kitangulé River
NKOLE
MPORORO
Mt Mfumbiro
Rusizi Lake
RUMANIKA'S PALACE
Mount Kenia
discovered by Dr Krapf 1849

firmed a statement I had heard of the same nature, in 1855, when travelling in the Somali country. I could not fix in my own mind exactly what they alluded to; but so sure then did I feel that the Victoria N'yanza was the source of the Nile, that I proposed going to see it at once.

Captain Burton preferred going west to see the Tanganyika Lake.* Early in 1858 we arrived at Ujiji, a port on the Tanganyika Lake, by following down the course of the Gombé Nullah to its junction with the Malagarazi River, and then down that river to where it falls into the Lake Tanganyika. The height of the Tanganyika above the sea-level I ascertained, by boiling thermometers, to be only 1840 feet,† whilst Kazé, by the same measurement, was 3400 feet; so that we had arrived in a great trough or depression—much about the same level as Dr. Livingstone afterwards determined the southern Lake N'yassa to lie at.‡ At Ujiji I volunteered and crossed the lake in a small canoe to the island of Kasengé, in the hopes of obtaining a sailing-craft from Sheikh Hamed, an Arab merchant residing there. My hopes in that respect proved abortive; but I heard from the Arab that the island of Kasengé was situated nearly half-way between the north and south ends of the lake; that the southern end was broader and more open than the northern; that at the southern end a river called Marungu ran *into* the lake; and that at the northern end a river ran *out of* the lake.

Forgetting my lesson at Kazé, about the Arabs' ideas respecting the flow of a river, I took Hamed's words literally, and placed the results on my map. Next I returned to Ujiji, and went with Captain Burton to Uvira, within 10 or 12 miles of the northern end of the lake.

There we heard from the natives that the river at the head of the lake, called Rusizi, ran into the lake, and not out of it; which I believed, and so put it down on my map, not only because I saw

* The instructions given to the first expedition were, *first*, to make the best of their way to the reported lake of Nyassa, to the westward. See Journal of the Royal Geographical Society, vol. xxix., pp. 5 and 14.—[ED.]

† The elevations were ascertained, during the first expedition, at first by means of proper hypsometrical thermometers supplied, but these were subsequently broken; and some of the later observations for height were made with less perfect thermometers, which showed a considerable index error (in excess) on their being boiled at the coast on their return. From the impossibility of ascertaining when this error first appeared, the results were taken as they showed, except where they subsequently were found to be wrong by the earlier experiment. If this error occurred before reaching Lake Tanganyika, it will affect the assumed elevation of that lake considerably, and, with that, the physical geography of its region.—[ED.]

‡ These thermometers were boiled with many others at Zanzibar, and their index errors ascertained.

the head of the lake was surrounded by mountains deepening to the northward, and gradually tapering down the sides of the lake, but also because Bombay told both Captain Burton and myself that Hamed really meant the Rusizi ran into the lake.* It was a pity, then, I did not change the course I gave to the Marungu River; but I forgot my lesson, and omitted to do so. Both the Arab and the natives said the Rusizi was a very large river, much greater than the Malagarazi River; and the Arabs of Kazé said the same thing of the Kitangulé River; for which reason I imagined the mountains encircling the head of the Tanganyika must necessarily attain an altitude of from 8000 to 10,000 feet; otherwise I could not conceive how such great rivers could have been generated in such a short distance as separates the Kitangulé from the Rusizi.†

Now, if the Marungu River really runs out of the Tanganyika,‡ as I believe it does, in all probability it drains that lake into the N'yassa, and so forms a chain of lakes supplying the Shiré and Zambezi rivers. This, too, appears the more likely as the Babisa tribes living on the west of the N'yassa, cross the Marungu River when they come for ivory to the south-east corner of the Tanganyika.

On returning to Ujiji, I proposed going together to have a look at the Victoria N'yanza; but, as my companion declined, I determined on doing it myself after our return to Kazé.§ Accordingly I volunteered, and set out alone, and accomplished my object, after travelling over an undulating plateau to 3° s. latitude, where I first beheld the lake. Its altitude, determined by the same boiling-

* See Burton in Journal of the Royal Geographical Society, xxix. 254; and 'Lake Regions,' ii. 118.—[ED.]

† Captain Burton, who went nearly to the head of Tanganyika, denies any knowledge of the existence of these mountains, as laid down by Captain Speke (see Burton's 'Lake Regions,' iii. 90, 91). They are not shown in Captain Speke's maps of their route sent home after their visit to the head of the lake, nor in his sketch-map sent in July, 1858. It was impossible to see them on either journey. In the first expedition their alleged north point was not approached within 160 miles, and the formation of the head of the lake prevented any distant view in any other direction. In the second expedition, the nearest and highest point, the Mfumbiro cones, are supposed to have been 50 miles distant, and the centre of the range is marked as 150 miles from the nearest point of the route. Their assumed height and position must be taken as inferential, as stated above by Captain Speke.—[ED.]

‡ Captain Burton's information from the Arabs was, uniformly, that the Marungu was an affluent, about equal in volume to the Malagarazi River. See Journal of the Royal Geographical Society, xxix., note †, pp. 237, 258.—[ED.]

§ On the return of the travellers to Kazé, much prostrated by illness and anxiety, and with means almost exhausted, Captain Speke volunteered, as above stated, when sufficiently recovered, while his sick companion prepared for the downward journey. See Journal of the Royal Geographical Society, xxix. 17; and 'Proceedings,' iii. 112, 113.—[ED].

instruments as those used on the Tanganyika, was 3740 feet. Of course, boiling-instruments are not very accurate; still they do not vary much; and I confidently believe, as I found no considerable stream running into the N'yanza, that the altitude of the N'yanza is even greater than that of Kazé. In fact, I only saw one nullah, which I christened Jordans, and one other, at a short distance from me, called Muinguira; neither of which is worthy of notice.

The best view I obtained of the lake was from the top of a hill overlooking Muanza, which I christened Somerset; but that was circumscribed to the eastward by the islands or promontory of Ukerewé and Mazita.

To extend my knowledge of the southern end of the lake, I next went to Observatory Hill, and heard from the best native authority in the district, a man who had been on the island of Ukerewé, and had seen the broad expanse of the Victoria N'yanza beyond it, that the lake was as broad on the eastern as on the western side, though it could not be seen by us then, in consequence of Ukerewé standing in the way. He also said the lake was of indefinite length. Now the length was a point I could not settle on that expedition; and it arose from the circumstance of the Waganda calling all water, whether lake, river, or pond, by the same name, N'yanza, and by their thus considering the Victoria N'yanza and Nile as one bit of water. I afterwards found this out when I was in Uganda, and asked where the lake ended; for some men said, "It goes between Usoga and Uganda, Kidi and Unyoro, and then up to Uthumbi—in fact, there is no end to it, for Usoga is an island, so there is no use talking any more on the subject; you may walk months and months and you will never see the end of it." Whilst others said, "Oh, it goes to the north, no one knows where."

The country leading from the snow-clad Kilimandjaro to the south-east corner of the Victoria N'yanza, as described by the missionaries Rebmann and Erhardt, deduced from native information, I have heard corroborated by coloured travellers who have frequented that line; and all tends to show that there are no rivers of importance draining into the N'yanza in that direction. My informants were both at Zanzibar and on the march.

Further, I have had men in my own employ who have travelled from Kilimandjaro, skirting south of Miru, and thence up to the N'yanza, close to the strait which connects the N'yanza with the Bahari (Lake) Ngo; and they say there are no rivers of any importance anywhere in the Masai country, for they had, everywhere west of Miru, to make long marches over rolling ground to reach water, and then all they found were small streams of no size

formidable enough to detain their foot-march, besides which some merchants, I was informed at Zanzibar, who once crossed the strait and went into Usoga, hoping to reach Uganda to open a direct trade with that kingdom, say the same thing. They all went in great force, and as fast as they could, in consequence of the barbarous nature of the Masai.

Dr. Krapf is the only person who tells us of a river running to the westward from the east-coast range; and his river rises in Mount Kenia. If this be true, then it must either run into the Bahari Ngo, or be one of the head branches of the Sobat River. This concludes all our information of the south and eastern side of the head of the Nile south of the Equator, by which it will be seen the Victoria N'yanza has no important affluents on either of those sides; and, therefore, whatever drainage there is of any consequence, emanating from the mountains which flank the east side of the great interior plateau within that limit, is carried off by either the Pangani, the Dana, or Jub rivers into the Indian Ocean.

Now, before drawing off from this portion of the description of the basin of the Nile, I will state in few words (to show what power of knowledge an explorer can possess himself of by local information) how, whilst at Kazé, on the first East African Expedition, I drew up and sent home a map so accurate in its general bearings, that it only required me to put down what we heard there, comparatively with our previous knowledge of the navigable Nile, to make my map nearly as complete as it stands at present.

We then heard of the Karagué, Uganda, and Unyoro countries lying with regard to one another as they actually exist. I heard also of the Wasoga, the Kidi, and the Bari people, in which latter country Gondokoro is situated. We heard of the Kitangulé and the Katonga rivers relatively placed as they now stand; and I heard of the Kīvira River, which is the Nile, running to the northward just as we find it. I heard also of the Mfumbiro Mountain being continually covered with clouds in consequence of its great altitude; and I heard of the Little Luta Nzigé, lying somewhere to the northward of the line, having some connexion with the Victoria N'yanza; but these two latter bits of information I did not exactly understand how to put down on my map. I also heard that when the N'yanza rose, it tore up and floated away islands, as, in fact, it does; and lastly, I again heard of some sailing vessels on the Nile, which, without doubt now, were those of the White Nile traders.

It must naturally be difficult for people in England to understand how the Arabs at Kazé could have learnt so much of regions to the north of the Equator, so I will briefly state the way in which

they have gained it. For several years these men have travelled through Uzinza, Karagué, Uganda, and Usoga, visiting the kings of those countries, and purchasing slaves and ivory. At Karagué and Uganda they have had trading depôts, and there they employ men to procure them ivory from Unyoro and Kidi, which latter country is the most celebrated of all for its products in ivory. The Arabs are very inquiring men; and from these men they had learnt much. But this was not their only source of obtaining information, nor yet their best; for the King of Karagué is very friendly with all the native potentates to the north of his country, especially with the King of Unyoro. They constantly exchange presents and news—the Karagué king from the south and the Unyoro king from the north. Through this medium it was that the Arabs heard of the Kidi and Bari people, and of the navigators on the Nile at Gondokoro; as a proof of this, the King of Unyoro, years before we reached Kazé first, sent the King of Karagué some carnelians and beads, which could only have come up the Nile, for they were totally different from any brought into the country by the Arabs of Zanzibar. Added to this, the King of Karagué himself described to me all the manners and customs of the natives down to the Bari people, as well as the nature and extent of those countries, so truthfully that I had very little to alter in my diary or plans of the countries ahead which I laid down at his capital.

I left Kazé again in 1861, and marched to the southern frontier of Usui, crossing over the Gombé, Kungué, Nurhunguré, and Ukongo nullahs, all of which run to the s.w. and are affluents to the Malagarazi River, without seeing any tributaries running to the N.E. to the N'yanza. In Usui, however, the land or spurs of those hills which encircle the head of the Tanganyika Lake decline to the east. The geological formation had changed from a flat or undulating plateau studded with granitic outcrops to a mountainous region of argillaceous sandstone, occasionally cut through by dykes of pure white quartz. On the west I heard of the Malagarazi, rising in the Urundi mountains, and draining into the Tanganyika; whilst here, on the east, I crossed one small stream or rivulet running under the N'yakasenyé ridge, and one other somewhat larger, resembling a good English trout-stream, called Lohugati, both trending their way to the N'yanza.

Leaving Usui, I next entered the still more mountainous country of Karagué, and found the drainage was all to the eastward, or into the N'yanza. The first piece of water I saw was the Urigi Lake. It is fast drying up, but still is drained by a passage into the Kitangulé River. Formerly, I was assured by the natives, canoes occasionally went by the passage into the Kitangulé, and

then either down to the N'yanza, or up to the Little Windermere Lake; but the waters now were too shallow to admit of this being done.

From this, after crossing over high spurs, the greatest altitude being 5500 feet, I viewed at one glance, 1500 feet below me, the Little Windermere Lake, the Ingézi River, and the Luchuro River, and found that the waters of all these combined formed the main branch of Kitangulé River. After this I navigated the Little Windermere, and saw it had a connexion with the Ingézi River, by canoes making the passage. The Ingézi channel was very deep, and probably contained as much water as would constitute one-third of the Kitangulé River. This, however, was not all the water I should imagine the valley of the Ingézi supplied, for the valley was very extensive, and some feet deep in water, resembling a lake, grown over with the tall papyrus-rush.

The Luchuro Valley well in view, I could see was of the same nature as the Ingézi, but somewhat larger. It is certainly navigable as far as Ruanda, for men of that country came to Karagué with goats for sale, and they said they performed the whole passage in canoes.

During my six weeks' residence at the capital of Karagué, I saw, from an altitude of 5500 feet, the Mfumbiro cones in Ruanda only three times, so constantly were they covered with clouds. They rise up beyond and above three or four spurs (radii of the mountains encircling the north end of the Tanganyika), in the kingdom of Kishakka, and attain an altitude, as well as I could judge by the eye, of 10,000 feet. Between those cones in Ruanda and the kingdom of Kishakka the natives say the Luchuro waters come down from Urundi, where there is a small lake like the Little Windermere, called Akanyara. The natives likewise say that there is a lake beyond these cones called Rusizi, which is drained by a large river into the Tanganyika Lake; and they also say there is a drainage from the northern side of those cones into the Little Luta Nzigé. All this matter I immediately put down on my map, to which, for further details, I must draw attention.

On quitting Karagué I descended from those hills which surround the head of the Tanganyika Lake, and crossed the Kitangulé River (16th January) in canoes. It was deep sunk like a canal, about 80 yards wide; so deep the canoe-men could not pole in the centre, and it travelled at the pace of an ordinary walk. No measurements were taken, and indeed if there had been they would have been nearly valueless, for as the course of the Nile stretches over 34° of latitude, you require to have a whole year's register at least of depth, breadth, and velocity, taken daily, and on every branch or river, to arrive at their comparative values; for whilst one

part of the Nile is in full flood, another part is at its lowest, and another part perhaps rising or falling. To this also I may add another great difficulty exists, owing to the fact that the waters of the rivers pulsate about in the flats or lakes before they can make any sensible rise and consequent overflow, and during this time rain may be falling, or the sun evaporating what the rivers have poured into them.

The Uddu portion of Uganda was now entered, and here I saw the full effects of the great rainy zone of the world. The fertility of this region was surprising, and the land so supersaturated with moisture, that I had to cross one or more palmyrus-rush drains per mile, all declining towards the N'yanza. The mountains encircling the head of the Tanganyika gradually disappeared from view, and instead small hills of soft argillaceous sandstone bent round the head of the N'yanza, in the folds of which grew such enormous trees as I never saw in my life before.

At Mashondé, lat. 50′ s., I obtained the first view of the Victoria N'yanza during this expedition; and again at certain intervals I continued to see the lake as far eastward as the Ripon Falls. In the mean time, however, I crossed the Katonga rush-drain, which debouches on the Equator, and then I entered Uganda Proper. The Katonga was the largest rush-drain I had as yet crossed, or rather it was a net-work of drains confined in a valley about 4 miles broad. It happened to be fordable everywhere just at this time, though the natives say it sometimes swells in certain parts to the height of a man, and therefore cannot be crossed on foot; and, still more strange to relate, they say it swells most when least rain falls in Uganda. All I can say for certain about this matter is, that the passage of the Katonga was not interrupted for a period extending over eight months, as during that time there was constant communication between the palaces of Karagué and Uganda, and those who went to and fro invariably forded the Katonga.

Once across the Equator, I found the drainage of the hills inclined to the northward, even though I was not very far from the lake; and I heard from the natives that the Mwérango River, which I crossed on the 13th February, rose in the lake. This statement may be disputed, but it seems probable from the fact that it is otherwise hard to account for the quantity of flowing water I found in its channel, viz., 12 yards broad by 6 or 7 feet deep. This Mwérango changes its name to Kafu in Unyoro, and there enters the Nile.

Next after leaving the Palace of Uganda, where I navigated the lake for a short distance down Murchison Creek, I turned north, crossed the Katawana branch of the Luajerri, and then

deflecting east, crossed the body of the Luajerri (19th July), and struck the Nile at Urondogani. Now the Luajerri in magnitude might be compared to the Katonga and Mwérango combined, for it is of greater breadth than the former, and has a slow and deeper flow than the latter. Nevertheless, it is nearly covered with the palmyrus-rush, and scarcely deserves the name of a river. It is said to rise in the lake, and to empty itself into the Nile. From Urondogani I tracked the Nile to the Ripon Falls (28th July), and there again I saw the Victoria N'yanza. The falls were 400 or 500 feet broad, with a drop of 12 feet, but broken in three places by rocks. Straight beyond the falls lay a low line of hill in the Kira district, shutting out a view of the broad surface of the lake; but, by following the Napoleon Channel a short way, I could see how the communication was kept up with the lake. Indeed the channel was a magnificent sheet of water, gradually expanding as it extended from me. It washed the Usoga shores, almost beyond the line of vision, and then as it bent south, it was shut out, as I have said, by the Kira hills. I had now seen the western half of the Victoria N'yanza, and had seen that there was only one river (the Kitangulé) of any importance flowing into it on that side. I had seen enough, too, of the Malagarazi River, combined with collateral information, to prove that the great equatorial floods take place just after the equinoxes; that the mountains encircling the Tanganyika form the water-parting between North and South Central Africa, and that the Victoria N'yanza was veritably the great reservoir of the Nile. The Waganda here also confirmed the native statements I had heard in Muanza regarding the extension of the lake to the eastward, where it was said there was as much water to the east of Observatory Hill as there was to the west; for the Waganda, who sometimes go into the Bahari Ngo for salt, said the Strait leading into the Ngo Lake was as far from the Ripon Falls as the mouth of the Katonga was in the opposite direction. They did not, however, know the Ngo by name, but called it a salt lake, as they found salt there. No one in these regions knew of a river flowing into the Ngo, but all alike stated that one flowed out of it and joined the Nile, thereby making, as they called it, Usoga an island.

Now leaving the Ripon Falls, and following the Nile as far as Urondogani, the river was clear and boisterous, like a fine Highland stream; but from that point to the Karuma Falls, it was like a large pond, with a breadth varying from 200 to 1000 yards. I did not follow it all the way, as I had a canoe fight on the Nile, and was obliged to go overland from Urondogani to the Palace of Unyoro. In doing so I recrossed the Luajerri and Kafu rivers. The Kafu at this time (9th Sept.) had much the

same amount of water in it as when I first crossed it in Uganda; but two months afterwards (7th November) it rose, tearing away masses of mud and grass, which floated on its boisterous waters like islands, and showed us the time of the Nile flood had arrived.

From the Palace of Unyoro I went to the Karuma Falls in canoes. The Kafu terminated after a short distance, when the Nile was reached, and found in full flood. Nowhere have I ever seen the Nile under so majestic an aspect. The Kitangulé bore no comparison with it, either in breadth or in velocity. It seemed quite alive with floating islands, and averaged from 2 to 3 fathoms deep. At the Karuma Falls (22nd November) I left the Nile plunging down a chasm direct to the westward, in which passage the natives informed me there was one grand waterfall. They also said, after going a certain distance, the river was met by the Little Luta Nzigé, and then deflected east to near where Mr. Debono's traders were stationed in Madi. I believe this to be true in both respects, as I found the Nile when I next inspected it (1st February) in Madi, close to the Asua River, apparently only just rising. It was highly discoloured, and floating down rushes; yet it did not appear to contain so great a body of water as I saw in the river at the Karuma Falls, although two months had elapsed. Moreover, on my arrival at Gondokoro, Dr. Murie, who had more experience there than myself, assured me it was only beginning to rise just as I reached that station; and further, Dr. Knoblecher, the founder of the Austrian Church Mission establishment at Gondokoro, ascertained by a long series of observations that the Nile reached its lowest level there in the middle of January.

Now though the Nile was rising it was the dry season in Madi, and the small rivers of that country had discharged all their waters into the Nile, except I may say the Asua, which never runs absolutely dry. During the rainy season in Madi, I heard it became so boisterous no one could cross it, but now as we forded it we found it only breast deep. This fact made me doubt the information I had heard of its having a direct connexion with the Victoria N'yanza, for it ought, if that were the case, to have been rising just like the Nile. It appears, therefore, that all the drainage of the N'yanza must come down the channel of the Nile, unless perchance the Sobat might be the river alluded to by the Arabs and natives as "making Usoga an island." Should this not be the case, then the Sobat must be an independent river, draining all the mountain range north of Mount Kenia up to this parallel, and so to the eastward as far as possible the basin of the Nile is determined. Now to complete the western side of the basin of the Nile as far as possible, I must state as a positive fact the Nile at Gondokoro is the parent or true Nile. No explorers on the Nile,

of the present time, doubt that for a moment; and all those—there are many—who have recently directed their attention to the discovery of the source of the Nile have invariably looked for it south of Gondokoro. This matter established,—as on the east the only affluent to the Nile worthy of any notice was the Asua river, and that was so small it could not have made any visible impression on the body of the Nile,—leaves only the Little Luta Nzigé to be discussed, for the rest of the land included in the basin of the Nile is drained into the Nile north of Gondokoro. Information assures me that as the Malagarazi and Rusizi rivers drain the southern side of the mountains encircling the Tanganyika, so do the Kitangulé and Little Luta Nzigé drain the north side of those mountains, and this I think is proved by the fact that the Nile at Gondokoro was not so large as the Nile was in Unyoro during the flood. For this reason also, I feel very sure the Little Luta Nzigé of itself, if it was not supplied by the Nile as a back-water, would be nothing more than a flat rush-marsh, like the Bahr-el-Ghazal.

Let me now—so far as boiling thermometers will prove that there is a watershed both north and south of the mountains encircling the head of the Tanganyika—show what I have established by their means. On this work two sorts of boiling apparatus have been used. One by which the thermometer was held vertically whilst boiling it, and the other by which the thermometer was held horizontally. The vertical, which was only employed on the first expedition, made the Tanganyika 1844 feet, and the Victoria N'yanza 3740 feet above the sea-level; but the horizontal, which was only employed on the second expedition, made the Victoria N'yanza 3306 feet above the sea-level. Thus we have a difference of 434 feet either to subtract from the vertical or to add to the horizontal, to bring them both to one common scale. Fortunately we have the means of deciding this point, as Gondokoro had been previously determined to be 1600 feet above the sea-level, whilst my horizontal instrument only showed 1298 feet, a difference minus of 302 feet. The two differences now being both minus, but of different quantities, it is obvious we ought to take the mean of these differences and add it to the sum of the horizontal. Now the Nile at Paira in Madi was made 1793 feet by the horizontal, so if we add the mean of the differences, or 368 feet, to this, we have a total altitude of 2161 feet at Paira, which throws the Little Luta Nzigé more than 300 feet above the Tanganyika Lake. There are only three cataracts on the Nile between the Victoria N'yanza and Gondokoro, which by this mode of calculation are relatively from the N'yanza 3740 feet, to Urondogani 3233 feet = 507 feet fall. From Urondogani 3233 feet, to Paira 2161 feet = 1072 feet fall; and

from Paira 2161 feet, to Gondokoro 1600 feet = 561 feet fall. The most remarkable of these, however, is the middle one, as the cataract is confined to the distance between the Karuma Falls and the Little Luta Nzigé; but this drop, strange as it appears, is not so great in comparison as the fall of the Ruaha River where it intersects the east coast range,* for I found Ugogi on the west flank of that range was 2766 feet, whilst Zungoméro on the east flank measured only 330 feet, making a fall of 2436 feet in a distance of only 100 miles. This, too, was done by the vertical. Now I do not wish it to be supposed that the index reading would be different because an instrument was held vertically or horizontally, but to distinguish the one from the other I have employed those terms. The truth of the difference, I suspect, lies in this, that the instruments used on the first expedition by which the altitudes of the Victoria N'yanza and Tanganyika lakes were determined had very little boiling effect produced on them, whilst those I measured the levels of the Nile with had done very considerable work; the effect of which is, that by constant application of heat, the glass must have permanently expanded, reduced the size of the bore of the tube, and by the same reason the mercury rose higher than it ought to have done for its fixed index.

Left for consideration, is what becomes of the rainfalls on the Equator west of the mountains encircling the head of the Tanganyika Lake? I believe, myself, they are drained off by the Congo river into the Atlantic, else the Bahr-el-Ghazal would be as large as the White Nile, and I think this proves the existence of a high plateau, lying between those mountains and the head streams of the Bahr-el-Ghazal, which drains both south-west and north-east. On that equatorial plateau, again, only still further west, without doubt will be found the sources of the Chadda and Gaboon rivers; as it is impossible, owing to the system of the seasons in the interior of Africa, that any rivers could be of such magnitude, containing large perennial flows in them, unless they rose within 3° of the Equator. The extreme limits of the rainy zone, where rain falls more or less all the year round, are contained in that narrow belt; whilst beyond it, both north and south, the land is subject to continual droughts for five, six, or more months in the year, which last systematically longer as the distance increases from it. These great periodical seasons are regulated by the position of the sun, which the rain follows; so that when the sun is in the south it is dry in the north, and *vice versâ*. People

* The Ruaha River was not seen by either the first or second expeditions; see the Journal of the Royal Geographical Society, xxix., p. 306, &c., and Captain Speke's Journal, &c., p. 56.—[ED.]

might point to the N'yassa as an argument against this view, it being a lake of such magnitude, and able to supply so large a river as the Shiré, though situated so far distant from the equatorial rains. This, however, only strengthens the case, and shows it must have connexion with that rainy zone either by being directly joined by a river to the Tanganyika, or else, which is much less likely, by a river coming round the Tanganyika; for otherwise it would be a rising and falling lake like Tchad.

In conclusion, as this subject is exhausted, I trust I may here be permitted to tender my humble acknowledgments and gratitude to the Society for the able and influential assistance they afforded me in procuring this knowledge, as well as for the indefatigable interest they displayed to succour and render the Expedition help in coming down the Nile. Without the influence of the President and Council of the Society with the Government I could not have started, from want of funds; I could not have obtained the services of my noble companion Captain Grant, whose meteorological registers, drawings, and botanical collections have added so much interest to the scientific world; nor, indeed, could I have gone myself unless they had obtained my services from the Indian Government.

J. H. SPEKE.

Itineraries of the Second East African Expedition under the Command of CAPTAIN J. H. SPEKE. Computed by EDWIN DUNKIN, Esq., Greenwich Observatory.

LATITUDES of STATIONS and ERRORS of the CHRONOMETER, from Observations made by CAPTAIN SPEKE, between Jiwa la M'koa and the Coast.

Station.	Month and Day.	Latitude S.	Object observed for Time.	Error of Chronometer on Local Time.
	1860.	° ′ ″		M. S.
Bagamoyo	Sept. 29	6 25 59	Antares	−5 36·2
,, ...	,, 30	..	⊙ L L	−5 28·5
,, ...	,, 30	..	,,	−5 31·5
Bomani	Oct. 3	6 30 44	⊙ L L	−4 20·2
Ikambúrú	,, 4	6 33 49		
Kizoto	,, 5	6 38 29		
Kiranga Ranga	,, 6	6 42 49		
Muhugwe	,, 8	6 53 49		
Matamombo	,, 12	7 10 39		
Dégé la Mhora	,, 13	7 14 9		
Kidunda	,, 14	7 15 39		
Kiruru	,, 19	7 24 34	α Arietis	+ 56·4
,, ...	,, 19	..	,,	+ 54·4

LATITUDES of STATIONS and ERRORS of the CHRONOMETER, &c.—*continued.*

Station.	Month and Day.	Latitude S.	Object observed for Time.	Error of Chronometer on Local Time.
	1860.	° ′ ″		M. S.
Duthumi*	,, 21	7 24 13	α Arietis	+1 36·7
,, ...	,, 21	..	,,	+ 29·6
,, ...	,, 21	..	α Ceti ..	+ 30·8
Zungomero	,, 23	..	α Arietis	+6 23·4
,, ...	,, 24	7 26 51	,,	+1 2·7
,, ...	,, 24	..	,,	+1 3·7
,, ...	,, 24	..	α Aquilæ	+1 3·4
,, ...	,, 24	..	,,	+1 3·9
,, ...	,, 25	7 26 56	,,	+1 12·3
,, ...	,, 25	..	,,	+1 15·5
,, ...	,, 26	..	,,	+1 32·1
,, ...	,, 26	..	,,	+ (31·2)†
Kirengwe	,, 28	7 32 17		
Makata	Nov. 4	7 20 37		
Ngoto	,, 5	7 13 54		
Muhanda	,, 6	7 9 9		
Mbumi	,, 11	6 56 30		
Manyonge	,, 14	6 47 0		
Rumuma	,, 15	6 46 29		
E. Ugogo	,, 23	..	☉ L L	−2 26·1
,, ...	,, 24	6 31 12		
,, ...	,, 25	..	☉ L L	−2 13·0
,, ...	,, 25	..	,,	−2 13·4
,, ...	,, 25	..	α Aquilæ	−2 11·5
,, ...	,, 25	..	,,	−2 12·0
,, ...	,, 25	..	Aldebaran	−2 8·8
,, ...	,, 25	..	,,	−2 7·8
W. Kanyanye	Nov. 30	..	Aldebaran	−2 3·2
,, ...	Dec. 1	6 23 51		
		Mean		
Camp M'daburu Nullah	,, 18	=6 21 49		
,, ...	,, 18	..	Aldebaran	+ 40·5
,, ...	,, 18	..	,,	+ 41·0
,, ...	,, 18	..	,,	+ 41·3
,, ...	,, 20	..	☉ L L	+1 2·6
Camp. The Springs	,, 26	6 7 52		
The "Boss"	,, 30	6 3 59	Sirius ..	+4 25·1
	1861.			
Jiwa la M'koa	Jan. 1	6 0 37	Procyon	+5 28·5
,, ...	,, 3	..	,,	+5 27·4
,, ...	,, 3	..	,,	+5 29·2

* The computations on this day were made in duplicate. There is nothing apparently to account for the discordant Chronometer error. The lunar was observed between the observations of α Arietis.

† 1 minute wrong ?

LONGITUDES of STATIONS between Jiwa la M'koa and the Coast, determined from Observations of Lunar Distances made by CAPTAIN SPEKE.

Station.	Month and Day.	Distances between	Resulting Longitude.	Mean.
	1860.		° ′ ″	° ′ ″
Kiruru	Oct. 19	Moon and Mars ..	38 14 0	38 14 0
Duthumi	,, 21	,, Arietis ..	38 14 30 (?)	
.. ..	..	.. ..	38 31 0 (?)	
The first result for Duthumi is obtained by using the chronometer +1 minute 36·7 seconds; and the second + 30 seconds.				
Zungomero ..	Oct. 24	Moon and α Arietis	37 37 15	
,, ...	,, 24	,, α Aquilæ	37 33 45	
,, ...	,, 25	,, α ,,	37 34 15	
,, ...	,, 25	,, α Arietis	37 40 15	37 36 45
,, ...	,, 25	,, Mars ..	37 39 45	
,, ...	,, 26	,, α Aquilæ	37 27 30	
,, ...	,, 26	,, Mars ..	37 44 30	
E. Ugogo	Nov. 25	,, ...	35 33 45	
,, ...	,, 25	,, ,, ..	35 29 30	35 32 4
,, ...	,, 25	,, **Fomalhaut**	35 15 45	
,, ...	,, 25	,, **Aldebaran**	35 49 15	
,, ...	,, 25	,, Pollux (?)	.. ..	
W. Kanyanye ..	,, 30	,, Aldebaran	35 4 45	
,, ..	,, 30	,, ,,	35 6 45	35 6 10
,, ..	,, 30	,, ,,	35 7 0	
Camp M'daburu Nullah	Dec. 18	,, ,,	34 40 30	
,,	,, 18	,, ,,	34 51 45	34 50 8
,,	,, 18	,, ,,	34 55 15	
,,	,, 18	,, ,,	34 53 0	
The "Boss" ..	,, 30	,, ,,	34 18 30	34 18 30

Note.—The Tabular Distances have been corrected for the errors of the Lunar Tables.

For convenience of reference, the Longitude of the different Stations, determined from all the Lunar Distances observed, is extracted from the Abstract. The results are as follow:—

	° ′ ″		° ′ ″
Kazé	33 1 34 E.	Masaka	31 33 15 E.
Mininga	32 39 50	Kibibi	32 9 45
M'bisū	32 23 15	Bandawarogo	32 44 30
Kagongo	32 6 30	Chaguzi W. of Pal. ..	32 19 49
Kariwamis	31 28 40	Faloro	31 50 45
Uthungū	31 28 30	Gondokoro	31 46 9
Wéranhanje	31 1 49	Island Point, W. of Sobat	31 24 0

The Latitudes of all the Stations can be easily seen by reference to the Abstract.

Longitude of Kazé.

Lunar Distances were observed on January 31, March 1, 2, and 3, 1861. The Chronometer errors used in the reductions are as follow:—

1861.			Kazé M. T.		M.	S.
Jan. 31	..	Observations of Aldebaran, at	.. 11·33 P.M.	=	+ 12	11·8
,,	..	α Orionis	.. .. 12·35	=	+ 12	14·7
			12·14	=	+ 12	13·3
March 1	..	.. ⊙ L L	.. .. 20·54 A.M.	=	+ 13	43·9
,,	..	,,	.. .. 20·43	=	+ 13	44·4
			20·49		+ 13	44·2
March 2	..	.. ⊙ L L	.. .. 20· 4 A.M.	=	+ 13	55·8
,,	..	,,	.. .. 20·46	=	+ 13	56·0
,,	..	,,	.. .. 21·18	=	+ 13	58·2
			20·43	=	+ 13	56·7
March 3	..	.. ⊙ L L	.. .. 20·53 A.M.	=	+ 14	0·3
,,	..	,,	.. .. 21·46	=	+ 14	1·5
			21·20	=	+ 14	0·9

Longitude deduced from the Distances.

(Corrected for Error of Lunar Tables.)

1861.			H.	M.	S.		°	′	″		Weight.
Jan. 31	☽	to Jupiter	2	1½	28	E. =	32	50	45	E.	2½
,, 31	,,	Saturn	2	10	48	=	32	42	0		3
Mar. 1	,,	⊙	2	11	46	=	32	56	30		11
,, 1	,,	,, ...	2	13	6	=	33	16	30		12
,, 1	,,	,, ...	2	12	4	=	33	1	0		5
,, 2	,,	,, ...	2	11	50	=	32	57	30		11
,, 2	,,	,, ...	2	11	51	=	32	57	45		11
,, 3	,,	,, ...	2	12	20	=	33	5	0		1
,, 3	,,	,, ...	2	12	43	=	33	10	45		1
,, 3	,,	,, ...	2	12	9	=	33	2	15		1
,, 3	,,	,, ...	2	12	37	=	33	9	15		5

Taking the mean of the above, giving weight proportional to the number of observations on each day, the concluded value becomes 33° 1′ 34″ E.

Note on Jan. 31.—"Dew very troublesome, but sky clear." In the mean, I have given only *half* weight to the results on this day, the remaining observations having been made under more favourable circumstances.

LATITUDES and LONGITUDES of STATIONS near the SOURCE of the NILE, determined from Observations of Altitudes and Lunar Distances made by CAPTAIN SPEKE.

Station.	Year, Month, and Day.	Latitude.	Year, Month, and Day.	Longitude in Time.	Adopted Longitude in Time.	Longitude in Arc.	Adopted Longitude in Arc.	Error of Chron., or Local Time from Obs. Altitudes.*	Approximate Time of Obs. for Chron. Error.	Variation of Compass.
	1861.	° ′ ″	1861.	H. M. S.	H. M. S.	° ′ ″	° ′ ″	M. S.	H. M.	° ′
Kazé	Mar. 2	5 0 52 S.	Mar. 14	..	..	..	..	+14 53·5	8 53 A.M.	
,, ...	..	..	,, 14	..	..	..	..	+14 53·5	8 55	
,, ...	..	..	,, 14	..	..	..	..	+14 54·8	9 2	
,, ...	..	..	,, 14	..	..	..	..	+14 55·2	9 14	
1st Usagari	Mar. 20	4 49 33								
Unyambéwa Sultanat	,, 22	4 40 19								
Mininga	,, 27	4 18 34	Mar. 28 Apr. 2	2 11 4 E.	..	32 46 0 E.	..	+16 41·7 +18 2·3	8 49 9 35	11 30 W.
,, ...	,, 27	4 18 37	,, 3	2 10 28	2 10 39·3 E.	32 37 0	32 39 50 E.	+18 4·3	9 38	12 4
,, ...	..	..	,, 3	2 10 26	..	32 36 30				
,, ...	..	..	May 17	..	..	..	..	+16 48·9	8 32	
Mbisú	May 23	4 3 53	May 29	2 9 33	2 9 33	32 23 15	32 23 15	+ 6 15·7	9 8	
Núnda	June 1	3 58 59								
Phunzé	,, 8	3 53 35								
Takina	,, 9	3 50 20								
M'yongas	,, 10	3 46 45								
Ruhés	,, 12	3 34 24								
Mihambo	,, 13	3 29 59								
Kagwé	,, 15	3 25 26								
Makakas	,, 16	3 28 24								
Lúméresís	July 21	3 26 10								
Mwamba	Oct. 7	3 23 7	Oct. 8	..	..	..	..	+ 1 36·8	8 17	11 20
Kagongo	,, 9	3 19 27	,, 9	2 8 26	2 8 26	32 6 30	32 6 30	+ 1 57·7	4 5 P.M.	

Kagéra	,, 10	3 14 34												
1st Uyombé	,, 12	3 11 4												
Pongo's	,, 15	3 3 37												
N'yarûwamba's ..	,, 17	3 0 58												
North Wanga ..	,, 18	2 57 43												
N'yamanira's ..	,, 20	2 49 27	,, 21	..	..	..	..	+ 6 24·6	7 58 A.M.	10 55
,, ...	..	..	,, 21	..	..	..	..	+ 6 23·3	8 8	11 5
Kafumbû	,, 24	2 49 34												
Vikora's	,, 25	2 48 44												
Kariwami's	,, 26	2 47 24	,, 28	2 5 48	2 5 54·7	31 27 0	31 28 40	+ 6 4·6	9 40	
,, ...	..	..	,, 28	2 6 9		31 32 15				
,, ...	..	..	,, 28	2 5 47		31 26 45				
Uthungû	Nov. 1	2 41 33	Nov. 8	2 6 46		31 41 30				
,, ...	,, 1	2 41 34	,, 9	2 4 11		31 2 45		+ 4 36·0	9 35 P.M.	
,, ...	,, 3	2 41 39	,, 11	2 6 42		31 40 30		+ 4 27·6	6 40	
,, ...	,, 12	2 41 31	,, 11	2 7 36	2 5 54·0	31 54 0	31 28 30	+ 4 31·9	6 52	
,, ...	,, 12	2 41 43	,, 11	2 6 23		31 35 45		+ 4 34·2	11 31	
,, ...	..	..	,, 13	2 3 46		30 56 30				
Kitaré	,, 15	2 35 8												
Vihembé	,, 16	2 27 30												
Vigûra	,, 17	2 21 43												
Urigi	,, 18	2 11 23												
Khonzé	,, 20	2 5 28												
Kiwéra	,, 21	1 59 53												
Uthenga	,, 22	1 55 28												
Rozoka	,, 23	1 50 7												
Katawanga	,, 24	1 45 53												
Wéranhanjé	,, 26	1 42 41	,, 30	..	..	..	..	+ 0 52·9	3 11	10 46
,, ...	,, 28	1 42 44	Dec. 5	2 4 5	..	31 1 15	..	−14 2·0	3 48	
,, ...	..	..	,, 5	2 4 21	..	31 5 15				
,, ...	..	..	,, 5	2 4 21	..	31 5 15				
,, ...	..	..	,, 6	2 4 26	2 4 7·3	31 6 30	31 1 49	−13 51·1	9 27	

* The error is on local time throughout.

LATITUDES and LONGITUDES of STATIONS near the SOURCE of the NILE, &c.—*continued.*

Stations.	Year, Month, and Day.	Latitude.	Year, Month, and Day.	Longitude in Time.	Adopted Longitude in Time.	Longitude in Arc.	Adopted Longitude in Arc.	Error of Chron., or Local Time from Obs. Altitudes.	Approximate Time of Obs. for Chron. Error.	Variation of Compass.
	1861.	° ′ ″	1861.	H. M. S.	H. M. S.	° ′ ″	° ′ ″	M. S.	H. M.	° ′
Wéranhanje	..	..	Dec. 10	2 2 34 E.	..	30 38 30 E.	..	−16 14·2	9 6	
,, ...	..	..	,, 10	2 5 10	..	31 17 30				
,, ...	..	..	,, 27	2 3 54	..	30 58 30	..	−31 51·1	8 43 A.M.	
	1862.		1862.							
Kitangüle	Jan. 15	1 16 40 S.								
Ndongo	,, 16	1 12 35								
Ngambézi	,, 18	1 5 29								
Kiswére	,, 19	0 55 19								
N'yagussa	,, 24	0 53 33								
Ukara	,, 29	0 45 48								
Merüka	,, 31	0 36 2								
Sangwa	Feb. 1	0 30 47								
Masaka	,, 2	0 20 2	Feb. 3	..	..	..	..	− 1 29·6	7 57	Direct 9 23 W. Reflector 10 23
,, ...	..	..	,, 4	2 6 13	2 6 13 E.	31 33 15	31 33 15 E.			
Kituntü	,, 6	0 7 40								
Naküsi	,, 9	0 7 15 N.								
Kibibi	,, 10	0 15 0	,, 10	2 9 25	..	32 21·15	..	− 2 14·5	8 6 P.M.	
,, ...	..	..	,, 11	..	..	..	..	− 2 42·6	3 10	
,, ...	..	..	,, 11	..	2 8 39	..	32 9 45	− 2 43·9	3 24	9 28 W.
,, ...	..	..	,, 11	2 7 53	..	31 58 15	..	− 2 52·2	7 31	
Nakaténa	,, 12	0 17 55								
N'yamagoma ..	,, 13	0 17 15								

Bandawarogo Palace	Feb. 25	0 21 19	Mar. 7	2 11 55	2 10 58	32 58 45	32 44 30	+15 41·4	9 47		
,, ,,	..	..	,, 9	2 10 9		32 32 15		+20 45·7	4 2		
,, ,,	..	..	,, 13	2 10 50		32 42 30		+18 1·2	9 13		
,, ,,	..	..	,, 14	..	..	..	..	+17 26·6	7 58 A.M.	9 59	
,, ,,	..		,, 14	..	..	..	..	+17 26·3	8 16		
,, ,,	..		,, 14	..	..	..	..	+17 24·5	8 43		
Nasirié	July 8	0 32 30									
Namaouja	,, 9	0 39 44									
Baja	,, 10	0 47 35									
Kari	,, 11	0 51 45									
Urondogani	,, 21	0 52 27	Aug. 8	..	..	..	..	..	..	10 17	
Isamba	,, 25	0 43 49									
Kianúkka	Aug. 18	0 53 30									
Kidgwigas	,, 24	1 8 6									
Kiratosi	,, 30	1 19 47									
Ututi	Sept. 2	1 24 53									
Chaguzi, S. of Palace	,, 9	1 36 39									
Chaguzi, W. of Palace	,, 28	1 37 43	Sept 28	2 8 6	..	32 1 30	..	+ 1 36·5	3 26 P.M.		
,, ,,	..	..	Oct. 4	2 9 21	..	32 20 15	..	+21 25·0	8 40		
,, ,,	..	..	,, 5	2 9 36	..	32 24 0	..	+20 29·1	7 53		
,, ,,	..	..	,, 5	2 9 28	..	32 22 0	..	+20 22·4	8 37		
,, ,,	..	..	,, 9	..	2 9 19·3	..	32 19 49	+19 25·9	8 1 A.M.	8 11	
,, ,,	..	..	,, 17	2 9 28	..	32 22 0	..	+ 7 56·5	7 51	9 14	
,, ,,	..	..	,, 17	..	..	..	..	+ 7 54·7	8 46		
,, ,,	..	..	,, 18	2 9 49	..	32 27 15	..	+ 6 33·5	7 56		
,, ,,	..	..	,, 18	2 9 39	..	32 24 45	..	+ 6 32·0	8 21		
,, ,,	..	..	,, 28	2 9 7	..	32 16 45	..	− 5 37·7	7 45 P.M.		
Kitwara	Nov. 10	1 45 9									
Gwéni	,, 13	1 52 27									
Gútada	,, 20	2 15 10									
5th Camp, Kidi ..	,, 27	2 41 22									
Koki	,, 29	2 55 28									
Múdúa	Dec. 3	3 2 17									

LATITUDES and LONGITUDES of STATIONS near the SOURCE of the NILE, &c.—*continued.*

Stations.	Year, Month, and Day.	Latitude.	Year, Month, and Day.	Longitude in Time.	Adopted Longitude in Time.	Longitude in Arc.	Adopted Longitude in Arc.	Error of Chron., or Local Time from Obs. Altitudes.	Approximate Time of Obs. for Chron. Error.	Variation of Compass.
	1862.	° ′ ″	1862.	H. M. S.	H. M. S.	° ′ ″	° ′ ″	M. S.	H. M.	° ′
Faloro	Dec. 4	3 10 33 N.	Dec. 11	2 8 14 E.	..	32 3 30 E.	..	− 9 48·1	7 44 A.M.	
,, ...	,, 14	3 10 41	,, 11	2 6 47	..	31 41 45	..	− 9 48·6	8 11	
,, ...	..	..	,, 13	2 7 25	2 7 23 E.	31 51 15	31 50 45 E.	−12 39·1	8 17	
,, ...	..	..	,, 13	2 7 17	..	31 49 15	..	−12 41·2	9 3	
,, ...	..	..	,, 14	2 7 12	..	31 48 0	..	−14 34·1	8 22	
,, ...	..	..	,, 14	..	..	..	..	−14 36·1	8 59	
,, ...	..	..	,, 17	..	..	..	..	−17 5·1	7 59	8 22 W.
,, ...	..	..	,, 17	..	..	..	..	..	..	8 11
,, ...	..	..	,, 30	..	..	..	..	−32 59·7	8 35	
			1863.							
,, ...	..	..	Jan. 10	..	..	..	..	−49 1·6	8 26	
	1863.									
Panyoro	Jan. 11	3 21 47								
Paira	,, 13	3 25 27								
Apuddo	,, 15	3 34 33								
Madi	Feb. 5	3 47 15								
Laburé	,, 8	3 59 56								
Mugi	,, 11	4 7 1								
Marsan	,, 13	4 31 17								
Doro	,, 14	4 42 33								

Gondokoro	Feb. 16	4 54 5	Feb. 17	..	..	..	..	− 5 44·6	8 30	On Feb. 17, 1862.
		4 54 5	,, 20	2 6 41	..	31 40 15	..	− 9 10·2	7 34 P.M.	
			,, 20	2 6 53	..	31 43 15	..	− 9 9·0	7 43	8 43 W.
			,, 21	2 6 3	2 7 4·6	31 30 45	31 46 9	−10 55·2	7 44	8 59
			,, 23	..	..	..	..	−11 36·8	8 44 A.M.	8 56
			,, 24	2 7 56	..	31 59 0	..	−12 20·0	8 42	
			,, 24	2 7 50	..	31 57 30	..	−12 43·2	3 56 P.M.	

ADDITIONAL STATIONS.

	1863.								
Schnudas	Mar. 1	6 5 9 N.							
Mission Station ..	,, 3	6 49 32							
French Station ..	,, 4	7 8 18							
Island Point, W. of Sobat	,, 12	9 20 48	Mar. 12	2 5 36	2 5 36 E.	31 24 0 E.	31 24 0 E.	+ 6 19·7	8 19 A.M.
Gūtena Bazaar ..	,, 27	14 52 49							
Khartūm, British Consulate	Apr. 2	15 36 23							

HEIGHTS of STATIONS between KAZÉ and the COAST, from Observations made by Boiling-point Thermometer.

Station.	Height in feet. Therm. No. 2384.	Height in feet. Therm. No. 2389.	Mean.
Zanzibar	Negative result; owing probably to the want of accurate corresponding barometer reading.		
Kirŭrŭ	268	256	262
Duthŭmi	375	407	391
Zungoméro	440	591	516
Kirengŭé	724	654	689
Mbŭiga, E.	1068	1068	1068
Mbŭiga, W.	1066	1120	1093
Kikobogo	1717	1717	1717
Makata	1605	1605	1605
Ngoto	1673	1511	1592
Mŭhanda	1675	1621	1648
M'yombo	1514	1514	1514
Mbŭmi	1460	1414	1487
Mdunhŭi	**2040**	**2067**	**2054**
T'zanzi	**2501**	**2446**	**2474**
Manyongé	2931	2986	2959
Rŭmŭma	2428	2488	2468
Marenga Mkhali	2875	2821	2848
Inengé	3633	3633	3633
E. Robého	4685	4739	4712
W. Robého	5010	5285	5148
Marenga Mkhali	2498	2498	2498
E. Ugogo	3136	3109	3123
E. Kanyenyé	2619	2729	2674
W. ,, ...	2553	2607	2580
Usekhé	3342	3315	3329
Khoko	3160	3350	3255
1st Camp in Jungle	3408	3408	3408
3rd ,, ...	3483	3539	3511
Mabungŭrŭ	3758	3703	3731
"The Boss"	3702	3702	3702
Jiwa la Mkoa	4090	4090	4090
Mgongo Thembo	3991	3937	3964
Tŭra, E.	3772	3609	3691
Tŭra, W.	3651	3543	3597
Kigŭe	3768	3661	3715
Rŭbŭga	3362	3442	3402
Wali River	3442	3333	3388

Kazé.

	Thermometers.					
Nos.	2384	2385	2386	2387	2388	2389
Height =	3578	3604	3604	3470	3604	3524

Mean for Kazé = 3564 feet.

Note.—The Tables used in the reduction are deduced from Regnault's 'Table des Tensions de la Vapeur d'Eau.'

Assumed Mean Barometer reading for level of sea 29·92 inches.

HEIGHTS of STATIONS between Kazé and Gondokoro, determined by Observations of Boiling-point of Water.

Station.	Height in feet. Therm. No. 2384.	Height in feet. Therm. No. 2389.	Mean.
Iviri	3359	3359	3359
Usagari, S..	3251	3333	3292
,, N	3372	3453	3413
Unyambewa	3603	3776	3690
Ukumbi	3369	3608	3489
Mininga	3438	3438	3438
Ukani (1st Mbisu)	3351	3324	3338
,, (2nd Nunda)	3211	3318	3265
Ruhés in Bogwe	3209	3153	3181
Makakas	3286	3340	3313
Lumeresis	3408	3300	3354
Kagongo	3664	3390	3527
Kagera	3547	3629	3588
Ugombe	3469	3496	3483
2nd stage Usui	3989	3989	3989
3rd ,, ...	3873	3873	3873
Mugandoo	3974	..	3974
Uthungu	4028	3974	4001
Kitare	4184	4223	4204
Vihembé	3509	3617	3563
Northern Usui	3473	3501	3487
Urigi	3461	3433	3447
Khonzé	3392	3392	3392
Uthenga	3903	3959	3931
Nyamwara Summit	4592	..	4592
Weranhanjé	4628	4693	4661
Banks of Little Windermere	3666	3612	3639
Bandawarogo	3369	3431	3400
Namaouja	3130	3076	3103
Urondogani	2865	2865	2865
Napoleon Falls	3308	3308	3308
Luluga S. Unyoro	2829	2883	2856
,, W. ,, ...	2913	2898	..
100 feet above Kuruma Falls	2977	2977	..
,, ,, ...	3062	3022	
On the Nile at the Kuruma Falls ..	2970	2970	2970
Paira	1793	1793	1793
Gondokoro*	1298	1298	1298

* Mr. Consul Petherick, on the 25th February, 1863, made the altitude of Gondokoro, by a mean of three observations, 1265 feet.—[ED.]

MAGNETIC VARIATION observed by CAPTAIN SPEKE.

Date.	Stations.	Computed Azimuth.	Observed Azimuth.	Magnetic Variation.
1860.		° ′	° ′	° ′
Oct. 27..	Kirengwé	258 53	270 5	11 12 W.
,, 30..	Mbuiga	258 3	270 30	12 27
Nov. 11..	Mbumi	253 45	265 45	12 0
,, 23..	E. Ugogo	250 21	261 40	11 19
Dec. 20..	M'daburu Nullah	112 42	124 15	11 33
1861.				
Feb. 1..	Kazé	106 23	118 40	12 17
,, 1..	,, ...	106 25	118 15	11 50
,, 1..	,, ...	106 26	118 20	11 54
,, 1..	,, ...	106 28	118 25	11 57
,, 7..	,, ...	105 23	117 6	11 43
,, 26..	,, ...	96 45	108 55	12 10
Mar. 4..	,, ...	94 16	108 0	13 44
,, 8..	,, ...	92 40	104 30	11 50
,, 28..	Mininga	82 20	93 50	11 30
Apr. 8..	,, ...	76 16	88 20	12 4
Oct. 8..	Mwamba	94 50	106 10	11 20
,, 21..	N'yamanira	100 55	111 50	10 55
,, 21..	,, ...	101 15	112 20	11 5
Nov. 30..	Weranhanje	242 57	254 10	11 13
,, 30..	,, ...	243 25	254 20	10 55
,, 30..	,, ...	243 42	254 30	10 48
1862.				
Feb. 3..	Masaka	108 6	117 30	Wire direct. 9 24
,, 3..	,, ...	108 16	117 40	Wire reflector. 10 24
,, 3..	,, ...	108 25	117 50	Wire direct. 9 25
,, 11..	Kibibi	251 37	261 5	9 28
Mar. 14..	Bandawarogo	93 10	103 0	9 50
,, 14..	,, ...	93 17	103 20	10 3
,, 14..	,, ...	93 22	103 25	10 3
Aug. 8..	Urondagani	71 37	81 40	10 3
,, 8..	,, ...	71 26	81 50	10 24
,, 8..	,, ...	70 46	81 15	10 29
Oct. 9..	Chaguzi	98 27	106 35 to 106 40	8 8 to 8 13
,, 17..	,, ...	101 35	110 45	9 10
,, 17..	,, ...	101 39	110 50	9 11
,, 17..	,, ...	101 42	111 0	9 18
Dec. 17..	Faloro	117 23	125 45	8 22
,, 17..	,, ...	118 49	127 0	8 11
1863.				
Feb. 17..	Gondokoro	106 57	115 40	8 43
,, 17..	,, ...	107 41	116 40	8 59
,, 17..	,, ...	108 19	117 15	8 56

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